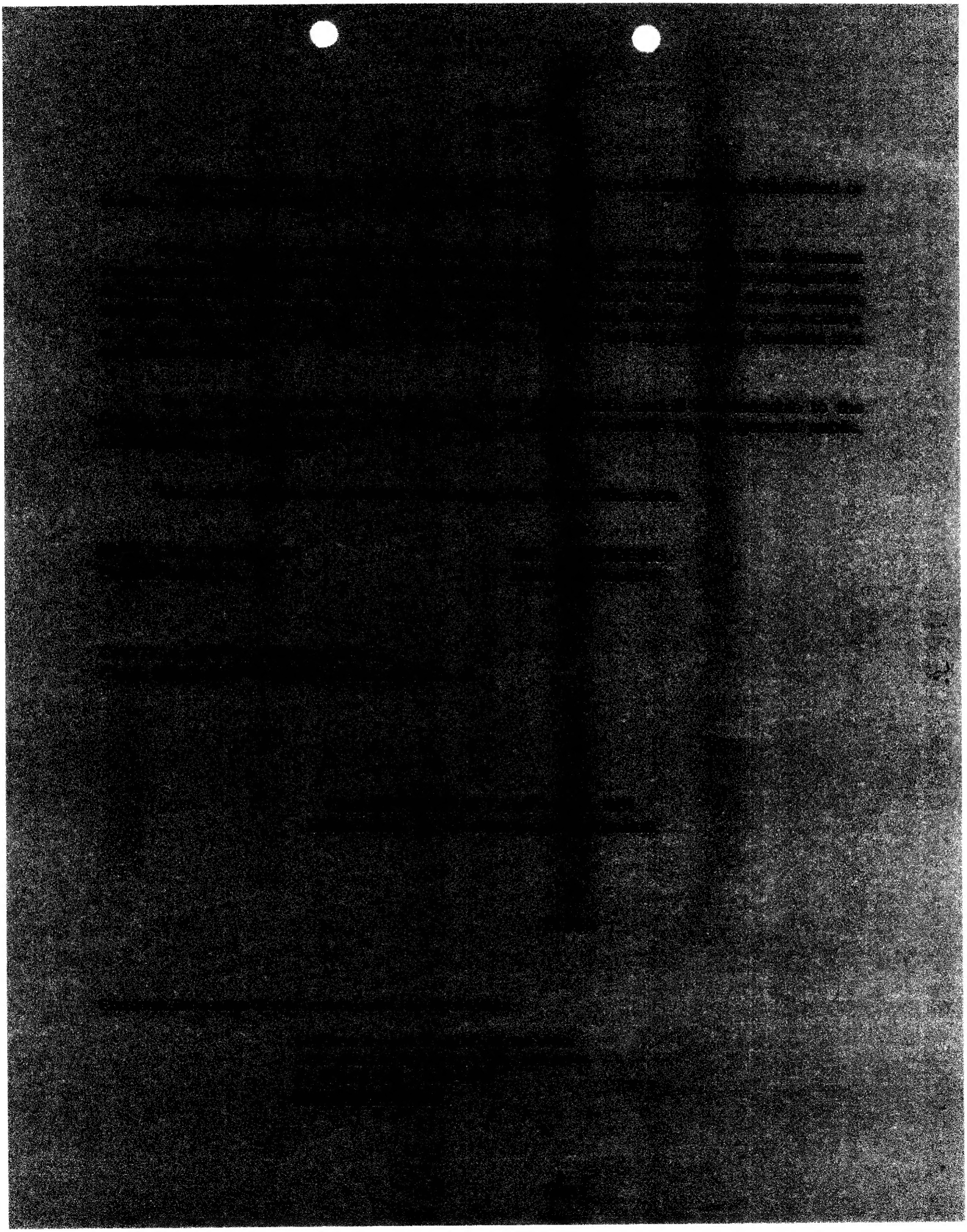

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14. ABSTRACT This report describes a formative evaluation of the Medical Education Network, Training for Operational Readiness (MENTOR) in 2010 courseware, which was designed to replace 100 hours of traditional lock-step instruction from the in-residence Flight Nurse/Aeromedical Evacuation Technician (FN/AET) Course as distributed, self-paced training. The MENTOR 2010 courseware was evaluated on training effectiveness, efficiency, and instructional design. Fifty-six students participated in the evaluation. Each student was exposed to 9 of the 30 MENTOR 2010 modules. Training outcomes were measured as increases in scores on achievement tests, increases in self-ratings of levels of knowledge and confidence in specific areas of nursing assessment and aeromedical evacuation (AE) equipment, and positive attitudes toward using the courseware to learn FN/AET knowledge and skills. Results can be summarized as follows. The MENTOR 2010 courseware was able to produce knowledge gains in FN/AET students that equaled knowledge gains produced by traditional classroom instruction. Students receiving FN/AET training using the MENTOR 2010 courseware showed the same level of awareness of their AE knowledge and confidence in applying that knowledge as students trained in the classroom and they spent 14% less time in training than students receiving traditional instruction. However, exposure to the MENTOR 2010 courseware negatively affected students' attitudes about MENTOR 2010, specifically, and computer-based training (CBT), in general. The results were compared to standard results obtained across many CBT studies (Kulik, 1994). The comparison suggested that the MENTOR 2010 courseware was far inferior to other courseware in overall gains in achievement, reduction in training time, and ability to motivate students, therefore, recommendations were made for improving the instructional design of the MENTOR 2010 courseware. Recommendations included: enhance reliability of the software, improve the graphical user interface so navigating lessons is less guesswork and more intuitive, provide advanced organizers in each lesson, include extensive practice exercise with explanatory feedback, use visual display aids to capture and focus student attention, use audio to direct student attention or to "walk" students through procedures, improve simulations by enhancing the physical fidelity of the representations of the medical equipment, build a glossary of terms and acronyms with hypertext links to and from lesson content, and reduce annoyance factors that distract from learning.

15. SUBJECT TERMS
Courseware; Distance learning; MENTOR 2010; Knowledge assessment; Learning; Multimedia training; Nursing assessment; Training

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PREFACE

This research was conducted under USAF Contract No. F41624-97-C-5031, Evaluating Multimedia Distance Learning Courseware, for the Air Force Research Laboratory, Human Effectiveness Directorate, Warfighter Training Research Division (AFRL/HEA. The Laboratory Contract Monitor was Dr Winston Bennett Jr., AFRL/HEA.

Documentation of this research was delayed due to personnel reassignments and the reorganization of the Manpower and Personnel Research Division at Brooks AFB TX. The final editorial and administrative work necessary to publish this report was accomplished at the Warfighter Training Research Division.

EXECUTIVE SUMMARY

This report describes the approach and results from a formative evaluation of the Medical Education Network, Training for Operational Readiness (MENTOR) in 2010 courseware. MENTOR 2010 courseware was designed to replace 100 hours of traditional lock-step instruction from the in-residence Flight Nurse/Aeromedical Evacuation Technician (FN/AET) Course as distributed, self-paced training. The purpose of the formative evaluation was to determine if the MENTOR 2010 courseware was instructionally up to par with the in-residence training.

The MENTOR 2010 courseware was evaluated on three fronts—training effectiveness, efficiency, and instructional design. Fifty-six students in the January 1998 FN/AET class participated in the evaluation. Each student was exposed to nine of the 30 MENTOR 2010 modules. A multidimensional approach was taken in evaluating the training effectiveness of the courseware. Training outcomes were measured as increases in scores on achievement tests, increases in self-ratings of levels of knowledge and confidence in specific areas of nursing assessment and aeromedical evacuation (AE) equipment, and positive attitudes toward using the courseware to learn FN/AET knowledge and skills.

Results from the formative evaluation can be summarized as follows. The MENTOR 2010 courseware was able to produce knowledge gains in FN/AET students that equaled knowledge gains produced by traditional classroom instruction. Students receiving FN/AET training using the MENTOR 2010 courseware showed the same level of awareness of their AE knowledge and confidence in applying that knowledge as students trained in the classroom. Students receiving MENTOR 2010 spent 14% less time in training than students receiving traditional instruction. However, exposure to the MENTOR 2010 courseware negatively affected students' attitudes about MENTOR 2010, specifically, and computer-based training (CBT), in general. Students receiving the MENTOR 2010 courseware reported being less motivated to learn than the students receiving traditional instruction.

The above results were compared to standard results obtained across many CBT studies (Kulik, 1994). The comparison suggested that the MENTOR 2010 courseware was far inferior to other courseware in overall gains in achievement, reduction in training time, and ability to motivate students. Therefore, recommendations were made for improving the instructional design of the MENTOR 2010 courseware. The recommendations capitalize on the computer's capabilities to deliver effective and efficient training.

Recommendations for improving the instructional design of the MENTOR 2010 courseware are as follows: (a) enhance reliability of the software, (b) improve the graphical user interface so navigating lessons is less guess work and more intuitive, (c) provide advanced organizers in each lesson, (d) include extensive practice exercise with explanatory feedback, (e) use visual display aids to capture and focus student attention, (f) use audio to direct student attention or to "walk" students through procedures, (g) improve simulations by enhancing the physical fidelity of the representations of the medical equipment, (h) build a glossary of terms and acronyms with hypertext links to and from lesson content, and (i) reduce annoyance factors, e.g., Ragnar the Viking, which distract from learning.

Student handouts are needed that parallel the MENTOR 2010 courseware. MENTOR 2010 handouts will facilitate student learning, reduce frustration, and decrease the time necessary to complete the MENTOR 2010 courseware.

A FORMATIVE EVALUATION OF MENTOR 2010 COURSEWARE

INTRODUCTION

This report presents the approach and results from a formative evaluation of the Medical Education Network, Training for Operational Readiness (MENTOR) in 2010 courseware. MENTOR 2010 courseware was designed to replace 100 hours of lock-step instruction from the in-residence Flight Nurse/Aeromedical Evacuation Technician (FN/AET) Course as distributed training. The purpose of the formative evaluation was to determine if the MENTOR 2010 courseware was instructionally up to par with the in-residence training. The formative evaluation directly compared instructional design, training effectiveness, and efficiency between MENTOR 2010 courseware and the current FN/AET course.

Brief descriptions of the in-residence FN/AET training, MENTOR 2010 courseware, and the approach taken in the formative evaluation are presented in the Introduction Section of the report. The remaining sections cover the two-phase evaluation process. Details of Phase 1 are presented in the second section of the report. Phase I included a front-end analysis of the in-residence course and courseware and a pilot study to tryout the evaluation procedure and instruments. Sections 3 and 4 respectively cover refinement of the evaluation procedures and instruments and the hypotheses. Details of Phase II—the formative evaluation and results—are presented in the fifth section of the report. The final section of the report covers recommendations on how to improve the instructional design, effectiveness, and efficiency of the MENTOR 2010 courseware.

Flight Nurse/Aeromedical Evacuation Technician Course

The Flight Nurse/Aeromedical Evacuation Technician (FN/AET) course teaches the duties required of nurses and technicians as Aeromedical Crew members in Aeromedical Evacuation (AE) units. Course duration is 5 weeks and 2 days in-residence. The course covers basic principles of altitude physiology, aerospace nursing, basic sciences, specialized nursing techniques, survival life support principles, and nuclear, biological, and chemical defense operations. FN/AET training has traditionally been presented as group lock-step instruction and includes practical exercises and simulated operational environments.

MENTOR 2010 Courseware

The MENTOR 2010 system was originally developed by the Surgeon General's Office for the US Air Force School of Aerospace Medicine (USAFSAM). The system is comprised of a MENTOR 2010 workstation and interactive multimedia courseware. The MENTOR 2010 courseware consists of 10 CDs containing 30 modules of FN/AET lessons. The modules range from teaching procedures for assembling and operating medical equipment to preflight and inflight patient care management. Table 1 lists the module topics in two categories, nursing assessment and medical equipment.

Table 1. MENTOR 2010 Courseware Topics

Nursing Assessment Topics	Aeromedical Equipment Topics
1. Organization/Operations	1. MTP
2. AE Forms	2. Lifepak 10
3. EENT	3. Pulse Ox
4. Mission Irregularities	4. Stryker Frame
5. Mental Health	5. Collins Traction
6. Patient Classification	6. ALSS
7. Personal Responsibilities	7. MiniOx
8. Respiratory Disorders	8. ECAS
9. Airway Management	9. PTLOX
10. Pediatrics	10. Bear 33 Ventilator
11. Obstetrics	
12. Burns	
13. Neurology	
14. Cardiac Disorders	
15. Orthopedics	
16. Theater AE	
17. Combat Casualty	
18. Shock	
19. Abdominal Trauma	
20. GI/GU	

Approach to the Formative Evaluation of the MENTOR 2010 Courseware

The focus of the formative evaluation was not on the MENTOR 2010 system. Rather the focus of the evaluation was on the MENTOR 2010 courseware relative to USAFSAM's FN/AET course.

Evaluation of the MENTOR 2010 courseware was conducted on three instructional fronts—effectiveness, efficiency, and design. Since the MENTOR 2010 courseware was intended to replace 100 hours of traditional instruction, the traditional FN/AET training served as the standard for comparison. Each MENTOR 2010 courseware module was evaluated individually by comparing it to its corresponding unit of traditional instruction. The FN/AET course has traditionally been delivered as a group lecture using the lock-step method. MENTOR 2010 courseware will be delivered as quasi-self-paced instruction. Students took the modules at their own pace, although, they were expected to have completed each module in accordance with the class schedule.

Results from the formative evaluation addressed the following:

- Training effectiveness and efficiency of the courseware,
- Student's reactions to the courseware, and
- How to improve the design of the courseware.

Training Effectiveness and Efficiency

A multidimensional approach was used to evaluate effectiveness and efficiency of the two instructional strategies (Cannon-Bowers, Tannenbaum, Salas, & Converse, 1991; Kraiger, Ford, & Salas, 1993). Student data were collected throughout the evaluation on the following measures: achievement tests, meta-cognitions, procedural skills, and time on task. Students' attitudes toward computers, perceptions of their training experience, and preferences for instructional strategies were also

Phase I: Front-end Analysis

A front-end analysis was required before the formative evaluation could be conducted. The front-end analysis occurred in two stages. Stage 1 involved preparing the evaluation materials. The fundamental task in Stage 1 was conducting an audit of the FN/AET course and courseware to identify where overlap existed between the courseware modules and FN/AET course. Stage 2 involved conducting a pilot evaluation. Table 3 lists the tasks completed in the front-end analysis.

Table 3. Front-end Analysis Task List

Stage 1: Prepare Evaluation Materials	Stage 2: Conduct Pilot Evaluation
✓ AUDIT FN/AET COURSE & COURSEWARE • DETERMINE PROPER SEQUENCING OF COURSEWARE MODULES • ESTABLISH TRANSITION SCHEDULE ✓ DESIGN EVALUATION INSTRUMENTS • Bio-Data Survey • Declarative Knowledge Tests • Meta-cognitive Measures • Training Assessment Survey • Skills Checklists • Computer Attitude Survey • Lesson Objective Comparison Survey ✓ DETERMINE DEGREE OF SIMILARITY BETWEEN LESSON OBJECTIVES	✓ IDENTIFY STRATA FOR GROUP ASSIGNMENT BASED ON BIO-DATA ✓ TRYOUT • GROUP ASSIGNMENT PROTOCOL • EVALUATION PROCEDURE • TRANSITION SCHEDULE • EVALUATION INSTRUMENTS ✓ COLLECT KNOWLEDGE, PERFORMANCE, AND ATTITUDE DATA ✓ REFINE EVALUATION PROCEDURE AND INSTRUMENTS FOR FORMATIVE EVALUATION

Stage 1: Evaluation Materials Preparation

Materials preparation was an extensive effort, as evidenced in the Stage 1 tasks listed in Table 3. The FN/AET course instructors played a critical role in Stage 1 of the front-end analysis, as well as throughout the evaluation process. The main role of the course instructors was to serve as subject-matter experts (SMEs). SMEs were central to the design and development phase of the bio-data survey and the achievement tests. Instructors also provided course resources necessary to design and develop the evaluation materials. Descriptions of the evaluation materials are found in the Methods portion of the Formative Evaluation Section.

The FN/AET course plan of instruction (POI) was used to determine the correspondence between the MENTOR 2010 courseware modules and course units of instruction. The POI was also used to extract the learning objectives for the units of instruction that corresponded to the courseware modules. The learning objectives from both sources, FN/AET course POI and MENTOR 2010 courseware, were used to create the Learning Objectives Rating Survey.

An added challenge in conducting the evaluation in the schoolhouse is shown in Figure 1. A transition schedule was required to identify the points in training when students were to be in the computer lab for self-paced instruction.

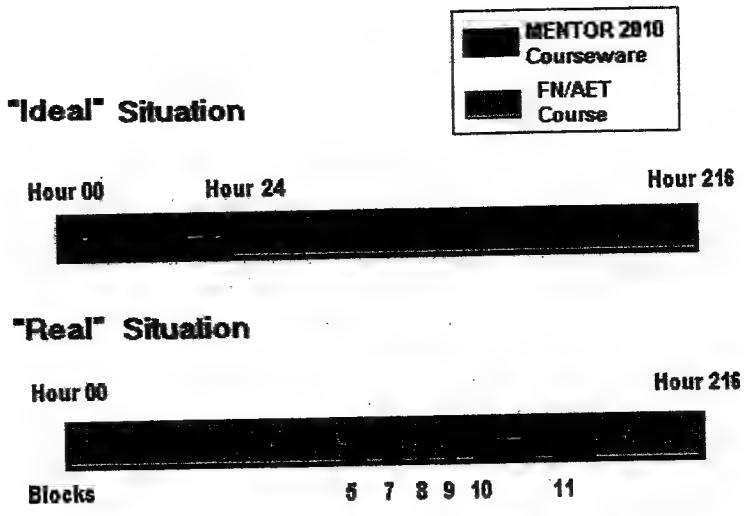


Figure 1. Correspondence between the MENTOR 2010 Courseware and FN/AET Course

Stage 2: Pilot Evaluation

The pilot evaluation served as a test of the evaluation procedures and instruments. The pilot evaluation covered 29 of 30 courseware modules. EENT (eye, ear, nose, and throat) was excluded from the pilot evaluation because the computer lab was not available at the time when EENT was taught. Numerous procedural changes and refinements to the evaluation instruments were made based on the outcome of the pilot evaluation.

The evaluation was designed to be as unobtrusive as possible. Student performance was not to be compromised. Performance was closely monitored to make sure that MENTOR 2010 students were meeting performance standards. Remedial training was available, but unnecessary.

Participants

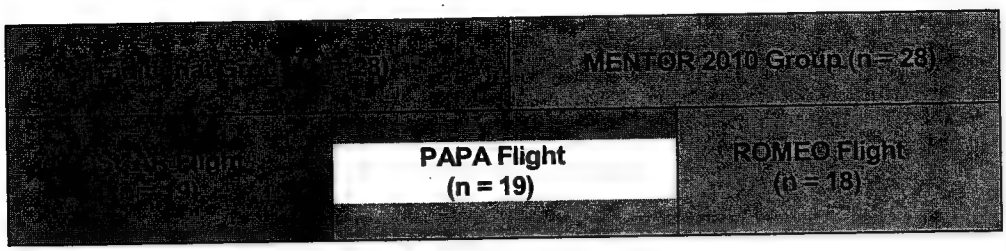
Fifty-six students enrolled in the October 1997 FN/AET Course (Class 971024) participated in the pilot evaluation of the MENTOR 2010 courseware.

Students were assigned to either receive 29 FN/AET lessons with the MENTOR 2010 courseware or attend the traditional FN/AET course lectures. Assignments to the two groups were made according to a stratified random sampling plan. The strata included active duty status, grade/rank, gender, and experience in the medical field. Simple random samples were taken from each stratum and combined to form two groups—*MENTOR 2010* and *Traditional*.

The class was divided into three flights for hands-on instruction. Hands-on instruction covered procedures for assembling and operating AE medical equipment. Once the two groups, *MENTOR 2010* and *Traditional*, were formed, students were also randomly assigned to one of the three flights, OSCAR, PAPA, and ROMEO (see Table 4). All students assigned to the OSCAR flight were in the *Traditional* group. Half of the students assigned to the PAPA flight were in the *MENTOR 2010* group

and the other half were in the *Traditional* group. All students assigned to the ROMEO flight were in the *MENTOR 2010* group.

Table 4. Assignment of Students to Groups and Flights



Evaluation Design

A variation of the before-after, two-group experimental design was employed in the pilot evaluation. The MENTOR courseware served as the treatment for one group. Traditional FN/AET instruction served as the treatment for the comparison group. Advantages of this design include being able to check to see if the randomization created equivalent groups of students; and students within groups serve as their own controls providing a precise measure of the effects of the treatments. A disadvantage of this design is that there is no way of knowing if the pretest biased students' performance on the posttest. Presumably, any bias due to pre-testing equally affects both groups.

Training Facilities and Materials

Lecture hall. Traditional FN/AET instruction was delivered in a large lecture hall in the schoolhouse. The lecture hall was suited for presenting multimedia (e.g., slides, PowerPoint®) lectures. The hall was also setup to be videotaped.

Computer lab equipment. The MENTOR 2010 courseware was delivered in a computer lab. The computer lab was equipped with 33 200 MHz Pentium MMX desktop computers. Each student was provided with the prepackaged MENTOR 2010 courseware. The MENTOR 2010 courseware was run in review mode. A large screen at the front of the room was used to display instructions.

Hands-on instruction and equipment labs. Hands-on instruction and practice with the medical equipment were conducted in a building separate from the lecture hall and computer lab. Each hands-on classroom served as an equipment lab, when students were scheduled for practice. Hands-on instruction and practice involved one flight at a time.

Transition schedule. The 971024 FN/AET class schedule served as the guide for the transition schedule. Entries in the course schedule were highlighted in gray indicating dates, times, and subject matter that corresponded to the MENTOR 2010 modules. The highlighted entries referenced the transition points for the *MENTOR 2010* group. At the

transition points, the students assigned to the *MENTOR 2010* group reported to the computer lab for training.

Evaluation Instruments

The instruments described below were developed or modified specifically for the evaluation. A criterion-reference approach was used in the construction of the achievement tests. Development of the test items was guided by FN/AET instructors, handouts, learning objectives from the POI, and a bank of questions provided by USAFSAM.

Bio-data survey. A 13-item survey was developed to gather background data and personal characteristics information. The personal characteristics information (i.e., active duty status, grade/rank, gender, medical background) defined the strata for group assignment. In addition, the background data indicated whether the student was aware of MENTOR 2010, had used MENTOR 2010, level of computer skills, and preference for classroom lecture or computer-based training (CBT).

Achievement tests. Two equivalent forms of a 10-item, multiple-choice test were developed for each of the 29 units of instruction to evaluate gains in knowledge. Testing required students to demonstrate their ability to recognize, i.e., identify and discriminate, correct from incorrect facts about FN/AET subject matter. Two meta-cognitive items that measured student awareness of the level of knowledge possessed on the topic being tested and confidence in applying that knowledge were included on the tests. The FN/AET course instructors and the Department of Academics reviewed the achievement tests to ensure that the formal block tests would not be compromised.

Training assessment survey (TAS). A 10-item survey was used to evaluate student perceptions of traditional classroom instruction. A 12-item survey was used to evaluate student perceptions of the MENTOR 2010 courseware. Two usability items were added to the classroom TAS to create the courseware TAS. Students made their responses on a 7-point scale anchored by reciprocal descriptors. For example "pace of instruction" was rated on a continuum anchored by (1) *appropriate* and (7) *inappropriate*. The TAS items covered aspects of effective training such as ease of understanding content, amount of interactivity, adequate practice, and motivational level.

Computer attitude survey. A 9-item survey was used to evaluate student attitudes toward computers. Students made their responses on a 7-point Likert-type scale where "1" represented *Completely Agree*, "3" represented *Agree*, "5" represented *Disagree*, and "7" represented *Completely Disagree*. The items tapped into general attitudes toward computer-based training (CBT) and specific attitudes toward receiving their FN/AET training on computers.

Time on task sheet. The *MENTOR 2010* group was required to record their start and stop times for each module. A time sheet for collecting the data was provided to each student.

Question tally sheets. FN/AET instructors and researchers recorded student questions in the computer lab.

Performance Measures

Block test scores. Student scores on the fundamentals of nursing block test and four other block tests were included in the evaluation. The scores were provided by USAFSAM.

Equipment proficiency checks (EPC). An EPC is a measure of a student's ability to perform specified procedures (e.g., preflight equipment, assemble, operate) with lifesaving equipment. Scores on the EPCs were provided by USAFSAM to be included in the evaluation.

Pilot Evaluation Procedures

At the first opportunity the class was briefed on the MENTOR 2010 evaluation project, its purpose, and importance of their participation. As part of the briefing, students read and signed informed consent documents and completed the bio-data survey. The survey data were immediately tallied and crosstabulated. Two FN/AET instructors and two researchers randomly selected students from the cells in the crosstabulation of active duty status, grade/rank, gender, and medical background categories and randomly assigned each student to either the *MENTOR 2010* group or *Traditional* group. Students were also randomly assigned to one of three flights, OSCAR, PAPA, or ROMEO.

Achievement pretests were distributed to the students before instruction and posttests were distributed immediately following instruction. Initially, students were required to circle their responses on the tests. Scoring the tests and entering the data into a computer was done by hand. Test booklets containing instructions to the student, a pretest, posttest, training assessment survey, and a time sheet soon replaced the individual tests. Toward the end of the pilot evaluation, students made responses on scantrons, which were electronically read into a dataset.

Traditional group. An achievement pretest was administered immediately before each lecture began. A posttest and the training assessment survey were administered immediately at the end of each lecture. Two forms of the achievement test were counterbalanced as the pretest and posttest.

MENTOR 2010 group. The *MENTOR 2010* group received a 15-minute computer and courseware orientation. The orientation taught students about the computer hardware, showed students how to access the MENTOR 2010 modules, and familiarized them with the screen layout and interactive features of the courseware. Verbal and written instructions on how to access the appropriate MENTOR 2010 module were provided at the beginning of each session.

A pretest was administered at the start of a courseware module. Students were reminded to enter start and stop times on their time sheets. The posttest and the training assessment survey were administered

immediately at the end of a module. Two forms of the achievement test were counterbalanced as the pretest and posttest.

Debriefing. The MENTOR 2010 students were debriefed as a group. The debriefing served as a forum for the students to express their views of the courseware. Information was gathered on the specifics of their likes and dislikes of the design of the courseware interface.

Outcome of the Pilot Evaluation

Achievement Tests

Only the Mental Health, Mission Irregularities, and Neurology courseware modules failed to produce significant gains in knowledge for the MENTOR 2010 students. Similarly, Mission Irregularities and Neurology taught in the traditional manner failed to produce significant gains in student knowledge. Comparisons of knowledge gains between the two groups favored traditional instruction for the topics of Organization and Operation, Theatre AE, and Stryker Frame/Collins Traction.

Meta-cognitive Items

The *MENTOR 2010* group showed a statistically greater gain in their self-reported level of knowledge in the area of Burns than the *Traditional* group. The *Traditional* group showed a statistically greater gain in their self-reported level of knowledge of Theater AE (TAES) and their confidence applying TAES knowledge and applying knowledge of Stryker /Collins than the *MENTOR 2010* group.

Time on task

The total time to complete the 29 courseware modules (excludes EENT) was 21.1 hours.

Training Assessment Survey (TAS)

Results from the TAS clearly identified the MENTOR 2010 modules that students felt needed improvement. An average rating of 5 on the 7-point scale was set as the cutoff for acceptability. Average ratings below 5 indicated an instructional deficiency.

Refinements to Evaluation Procedures and Instruments

Refinements to the evaluation procedures and instruments were made between the pilot evaluation and formative evaluation.

Changes in Procedures

Recall that in the pilot evaluation, random assignment of students was made to either the *Traditional* group or the *MENTOR 2010* group. The assignments created a flight that was pure *Traditional*, a flight that was pure *MENTOR 2010*, and a combined flight of *Traditional* and *MENTOR 2010* students. FN/AET course instructors observed that the class as a whole lacked cohesion. Dividing the class in half and allowing only half of the students to experience training on the computers was one possible explanation for the lack of cohesion. Therefore, the formative

evaluation design called for all students to experience a portion of their FN/AET training using MENTOR 2010 courseware.

Changes to Instruments

An item-analysis approach was taken in refining the 58 ten-item multiple-choice achievement tests. The approach identified test items that were ineffective in discriminating between *knowing* and *guessing* (Allen & Yen, 1979; Crocker & Algina, 1986). An index of item difficulty was calculated by examining the proportion of students that correctly answered the item. When item difficulty was greater than .50, the item was made more difficult. When item difficulty was less than .50, the item was made easier.

Refinements were made to the 10-item (classroom) and 12-item (courseware) TASs. Three items on the classroom TAS were reworded and an item was added to measure the repetitiveness of instruction, based on student comments during the debriefing. Two items were added to the courseware TAS to evaluate the utility of WINGS and SAM features of the courseware. Two items that previously measured usability of the interface were collapsed into one.

Hypotheses

The hypotheses tested in the formative evaluation are driven by findings in the CBT literature. The efficacy of CBT has been evaluated and is well documented. Numerous studies (Bangert-Downs, Kulik & Kulik, 1985; Chambers & Spreecher, 1980; Christinaz, 1995; Kulik, Bangert, & Williams,1983; Kulik & Kulik, 1986, 1987; Kulik, Kulik, & Bangert-Downs, 1985; Kulik, Kulik, & Cohen, 1980; Neimiec & Walberg, 1987; Orlansky & String, 1979; Roblyer, 1988) report the effect of CBT on student learning, student attitudes, student motivation, and instruction time. These studies evaluated the efficacy of CBT across a wide range of content areas, training settings, levels and types of instruction.

Kulik (1994) conducted a meta-analysis on CBT studies. The results of the meta-analysis indicated that:

- Students learn more--CBT raised achievement scores by 0.35 standard deviations, or from the 50th percentile to the 64th percentile, in all studies.
- Students learn in less time--CBT reduced instruction time by an average of 34% in 17 studies of college-level instruction and 24% in 15 studies of adult education.
- Students like their classes better--CBT positively impacted attitudes toward instruction by 0.28 standard deviations in 17 studies.

The hypotheses tested in the formative evaluation are as follows:

- Increases in students' knowledge, self-report level of knowledge in topic areas, and confidence in applying that knowledge were expected regardless of the instructional approach they experienced.

- Differences in knowledge and procedural skills were expected between the *MENTOR 2010* group and the *Traditional* group. The *MENTOR 2010* group was expected to perform better than the *Traditional* group.

- Differences in self-report levels of knowledge in a topic area and confidence in applying that knowledge were expected between the *MENTOR 2010* and *Traditional* group. However, we were uncertain as to the direction of difference.

- Differences in students' assessments of their training experience were expected. Overall assessment of the MENTOR 2010 training experience was expected to receive higher average ratings than assessment of the classroom experience.

- The total average time it took to complete 27 of the 30 MENTOR 2010 modules was expected to be less than the corresponding classroom time. In addition, the *MENTOR 2010* group was expected to show higher levels of performance in the equipment labs in shorter periods of time than the *Traditional* group.

- Student preferences for a specific instructional approach were expected to favor CBT.

- The MENTOR 2010 courseware was expected to have a positive effect on students' attitudes about CBT.

Formative Evaluation of MENTOR 2010 Courseware

The formative evaluation was conducted on the next class to follow the October 1997 class. The formative evaluation is described below.

Methods

Three courseware modules, Organization and Operation, AE Forms, and Pulse Ox, were excluded from the formative evaluation. The three models were excluded because they contained either insufficient or inaccurate information. Each of the remaining 27 MENTOR 2010 courseware modules was compared to its corresponding unit of traditional instruction.

Participants

Fifty-nine students attending the January 1998 FN/AET course participated in the formative evaluation. One student's data were dropped due to early withdrawal. Of the 58 remaining participants: 59% were female and 41% male; 65% were officers and 35% enlisted; 45% were regular Air Force, 38% were Air Force Reserve, and 17% were Air National Guard; 74% had occupations in medical-related fields and 26% did not.

Design

A variation of the before-after two-group design was employed for the formative evaluation. The "two-groups" refer to comparing the two instructional approaches—MENTOR 2010 courseware versus traditional FN/AET instruction. Knowledge and meta-cognitive measures were administered before and after each lesson. The TAS was administered after each lesson. The Computer Attitude Survey was administered before the evaluation began and at the end of the evaluation.

Student Assignment to Flights

A stratified random sampling plan was used to assign students to one of three flights—OSCAR, PAPA, or ROMEO. Results from the Bio-data Survey were used to divide the class into the following strata: active duty status, rank, gender, and experience in the medical field. A simple random sample was taken from each stratum and combined to make up a single flight. Two FN/AET instructors and two researchers made the flight assignments. Nineteen students were assigned to OSCAR, 19 students were assigned to PAPA, and 20 students were assigned to ROMEO.

It was assumed that stratified random sampling would produce comparatively homogeneous groups with respect to gaining FN/AET knowledge and skills from MENTOR 2010 courseware. An analysis of variance (ANOVA) was conducted to test whether any flight showed an advantage of fundamental nursing knowledge or computer skills. Students' scores on the fundamentals of nursing block test and ratings of their levels of computer skills from the Bio-data Survey were used to test the assumption.[1] No significant differences were found with either fundamental nursing knowledge ($\underline{M}_{OSCAR} = 42.6$; $\underline{M}_{PAPA} = 43.4$; $\underline{M}_{ROMEO} = 42.3$) or level of computer skills; ($\underline{M}_{OSCAR} = 2.3$; $\underline{M}_{PAPA} = 2.4$; $\underline{M}_{ROMEO} = 2.4$). All but two students from the ROMEO flight reported having fair to good computer skills.

Twelve of the 58 participants reported on the Bio-data Survey that they had heard of MENTOR 2010. Four of the 12 reported that they had used the courseware. Of the four, two participants were assigned to the PAPA flight and two were assigned to the ROMEO flight.

Flight Assignment for MENTOR 2010 Courseware

Each of the three flights was randomly assigned to 9 of the 27 modules targeted for the formative evaluation. Prior to making the random assignments, the modules were divided into nursing assessment topics and medical equipment topics (see Table 1). Each flight received six MENTOR 2010 modules on nursing assessment topics and three MENTOR 2010 modules on operating medical equipment (see Table 5).

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[1] Scores on the fundamentals of nursing exam, which is the first block test, were used in the analysis. The fundamentals of nursing exam is used as a pre-screening measure for the course. Maximum score on the test is 50 points. Self-report level of computer skills was collected on a 3-point scale where "1" represented *none*, "2" represented *fair*, and "3" represented *good*.

Table 5. Assignment of Flights to MENTOR 2010 Modules

[E] Indicates medical equipment lesson

OSCAR	PAPA	ROMEO
EENT	Mental Health	Mission Irregularities
Personal Responsibilities	Patient Classification	Pediatrics
MTP[E]	Respiratory Disorders	Obstetrics
Lifepak 10[E]	Airway Management	Cardiac Disorders
Burns	Stryker Frame[E]	Orthopedics
Neurology	Collins Traction[E]	ALSS[E]
Theater AE	ECAS[E]	MiniOx[E]
Combat Casualty	Abdominal Trauma	Bear 33[E]
PT LOX[E]	GI/GU	Shock

Training Facilities

Lecture Hall

Traditional FN/AET instruction was delivered in a lecture hall in the schoolhouse. The lecture hall was suited for presenting multimedia lectures, e.g., slides and PowerPoint® presentations. Two flights received lectures together, while the third flight received MENTOR 2010 courseware.

Computer Lab

MENTOR 2010 courseware was delivered in the schoolhouse computer lab. The computer lab was equipped with 33 200MHz Pentium MMX desktop computers. Each student was provided with the prepackaged MENTOR 2010 courseware. Only one flight at a time received training in the computer lab.

Hands-on Instruction and Equipment Lab

Hands-on instruction and practice with the medical equipment were conducted in a building separate from the lecture hall and computer lab. Each classroom was outfitted with at least three pieces of equipment. One flight at a time received hands-on training.

Students practiced procedures with the equipment during lab. Only one flight practiced with a particular piece of equipment at a time. During equipment labs, students were videotaped and observational data were collected on student performance in real time. Missed performance data could be retrieved from the videotapes.

Evaluation Instruments

Bio-data Survey

A 13-item survey was constructed to gather background data and personal characteristics information from the students. The items included current duty status, rank, gender, medical field experience, awareness and use of MENTOR 2010 courseware, computer skills level rating, and instructional media preference.

Test Booklet

Test booklets were constructed to facilitate data collection. The test booklets contained instructions to the student, pretest, posttest, and training assessment survey. The booklets differed for the two evaluation groups (*MENTOR 2010* and *Traditional*). The differences involved instructions to the student, the Training Assessment Survey (see below), and time on task sheet. Students receiving training via MENTOR 2010 were provided with instructions on loading the proper CD and were required to enter start and stop times for the lesson.

Students' responses were collected on scantrons. Scantrons were distributed with the test booklets

Pretest and posttest. Ten-point multiple-choice tests were used to assess achievement. Two equivalent forms (A and B) were constructed to serve as pretest and posttest measures. The forms were counterbalanced within a test booklet.

Meta-cognitive measures. Two meta-cognitive items were included at the end of both the pretest and posttest. The items measured how much students think they know about AE subject matter and how confident they feel in applying that knowledge. Responses were made on a 7-point scale where "A" represented *Not at all* and "G" represented *Very*. The meta-cognitive measures were also part of the evaluation sheet used in the equipment labs.

Training Assessment Survey (TAS)

Two surveys were designed to measure students' reactions to their training experience. The survey items addressed aspects of effective training such as ease of understanding lesson content, pace of instruction, emphasis on important terminology, and lesson relevance. Responses were made on a 7-point scale anchored by reciprocal descriptors, e.g., *sufficient* and *insufficient*.

An 11-item generic survey was used to assess traditional classroom instruction. This survey was applicable in any training setting. Three items were included in the survey to assess the courseware. The items were specific to the usability of the courseware. The additional items measured the ease of navigating the interface and portion of times the WINGS and SAM buttons were used.

Skills Checklist

Observational data were collected as students practiced using the medical equipment. The equipment proficiency checklists, used to assess students' skills, served as the data collection sheets for six pieces of equipment. Checklists for the remaining two pieces of equipment were constructed from the procedural steps listed in the manuals. The checklists provided a guide for tracking performance as procedural steps. The order in which students completed the steps and the correctness of each step were recorded.

Computer Attitude Survey

Students' attitudes toward computers were measured using a 9-item survey. The items were measured on a 7-point Likert scale where "A" represented *Completely Agree*, "C" represented *Agree*, "E" represented *Disagree*, and "G" represented *Completely Disagree*. The items measured general and specific attitudes such as attitudes toward using computers in the future, level of computer comfort, and attitudes toward using computers to learn FN/AET skills.

Performance Measures

Block test scores. Student scores on the fundamentals of nursing block test and four other block tests were included in the evaluation. The scores were provided by USAFSAM.

Equipment proficiency checks. An EPC is a measure of a student's ability to perform specified procedures, e.g., preflight equipment, assemble, and operate lifesaving equipment. Scores on the EPCs were provided by USAFSAM to be included in the evaluation.

Question tally sheets. The FN/AET instructors and researchers recorded questions asked by students in the computer lab.

Learning Objectives Ratings Survey

A survey was designed to collect similarity ratings for pairs of learning objectives. The task required an instructor to compare and rate 28 pairs of learning objectives. The learning objectives were extracted from the MENTOR 2010 courseware modules and course POI for each corresponding unit of instruction. Two of the courseware modules did not present learning objectives. The rating categories were "dissimilar," "similar," and "identical." The order of the learning objectives was randomized within the pairs and across the lesson topics.

Evaluation Protocol

A researcher and FN/AET instructor briefed all students on the purpose of the evaluation and the importance of their participation before the evaluation began. During the briefing, informed consent documents were signed, the Bio-data Survey was administered for purposes of making flight assignments, and the Computer Attitude Survey was administered (it was administered again at the end of the evaluation).

Time was allocated for a formal orientation to the computers. The orientation taught students about the computer hardware, showed students how to access the MENTOR 2010 modules, and familiarized them with the screen layout and interactive features of the courseware. Students accessed the module entitled "Courseware Orientation" on CD 1. An FN/AET instructor conducted the orientation.

The class was divided in half for computer orientation. OSCAR flight went through orientation immediately before receiving their first MENTOR 2010 module. The other two flights went through orientation in the morning and were assigned to the computers that afternoon.

Traditional group

Two forms of a test booklet were randomly distributed before each class. Students responded to the instructions on the front of the test booklet and completed the pretest. Once the lecture ended students immediately completed the posttest and TAS. An instructional design specialist attended the lectures and collected data in real time for the instructional design analysis.

MENTOR 2010 group

Two forms of a test booklet were randomly distributed when students entered the computer lab to complete a courseware module. Students responded to the instructions on the front of the test booklet and completed the pretest. The test booklet contained directions indicating the appropriate CD and module to access. Before beginning the module, students entered their start times. After completing the module, students entered their stop times and immediately completed the posttest and TAS. Instructors answered student questions and kept track of questions. Researchers kept track of hardware and software failures.

Equipment Lab

Equipment labs provided students access to the equipment and sufficient time to practice using the equipment. Instructors reviewed equipment procedures and emphasized necessary behaviors to pass the EPC at the start of each lab. The length of the equipment lab was up to the discretion of each individual student. Students were free to go whenever they chose.

It is important to note that equipment labs did not always immediately follow hands-on instruction. In addition, the order in which the equipment was taught varied across the three flights.

Observational data were collected on students practicing with the equipment. Observers recorded whether the students correctly accomplished a specific step in a preflight or operational procedure. The order in which the steps were carried out was recorded as well. Equipment labs were videotaped.

Students completed a 3-item questionnaire before leaving the lab. The questionnaire contained the meta-cognitive items that measured level of knowledge about a particular piece of equipment, confidence in applying that knowledge, and departure time.

Debriefing

Students were debriefed as a class. The debriefing served three purposes. The first purpose was to re-emphasize the importance of student participation in the formative evaluation. The second purpose was to provide an opportunity for students to air their opinions of the MENTOR 2010 courseware and training experience. The third purpose was to collect additional usability information.

Results

Results from the formative evaluation are divided into aspects of training effectiveness, efficiency, and instructional design. Both inferential and descriptive statistics were used in the analyses. The majority of data were analyzed using either ANOVA or analysis of covariance (ANCOVA). Planned comparisons were tested using paired t-tests for within group differences and independent t-tests for between group differences.

Training Effectiveness

Achievement tests. To control for differences in students' prior knowledge, fundamentals of nursing scores were used as a covariate in the ANCOVA conducted to test for differences in test scores. Figure 2 presents the pretest and posttest scores for the two groups. Expected increases in achievement test scores were produced by both instructional approaches [$F(1,1397) = 24.4$. $p < .0001$].

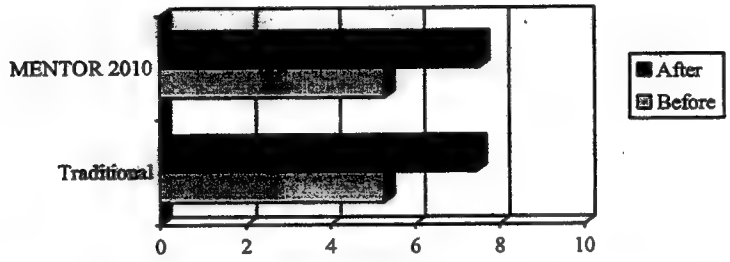

Figure 2. Average Pretest and Posttest Scores for the Two Instructional Approaches

Gain scores, the difference between pretest and posttest scores, were used to evaluate the training effectiveness of the MENTOR 2010 courseware. The *MENTOR 2010* group was expected to outperform the *Traditional* group on overall gains in knowledge. However, no difference was found between the *MENTOR 2010* group ($M = 2.24$) and *Traditional* group ($M = 2.18$) on overall average gain scores.

Significant differences in knowledge gain were found with 5 of the 27 lessons. The *MENTOR 2010* group gained significantly more knowledge than the *Traditional* group on the following lesson topics: Personal Responsibilities and Neurology. The *Traditional* group gained significantly more knowledge than the *MENTOR 2010* group on the following lesson topics: Patient Classification, Pediatrics, and Stryker Frame/Collins Traction.

Two lessons delivered in the traditional manner failed to produce significant gain scores. The lessons were Neurology and Cardiovascular Disorders. The Pediatrics lesson delivered as *MENTOR 2010* courseware failed to produce a significant gain in knowledge.

Meta-cognitive measures. When testing for differences in self-reported knowledge and confidence, gain scores from the achievement test were used as a covariate to control for differences in how much

students actually learned during training. The meta-cognitive items measured how much students think they know about AE subject matter and how confident they feel in applying that knowledge. The former is referred to as "self-report knowledge" and the latter is referred to as "confidence." The items were administered at the end of each pretest and posttest.

Figure 3 presents results for the self-report knowledge and confidence. Expected increases in self-report knowledge [$M_{PRETEST}$ = 2.7, $M_{POSTTEST}$ = 3.9; F=(1,1399) = 305.7, p < .0001] and confidence [$M_{PRETEST}$ = 2.7, $M_{POSTTEST}$ = 3.9; F=(1,1383) = 248.7, p < .0001] were found from pretest to posttest ratings. No differences were found between the instructional groups on overall gains in self-report knowledge and confidence.

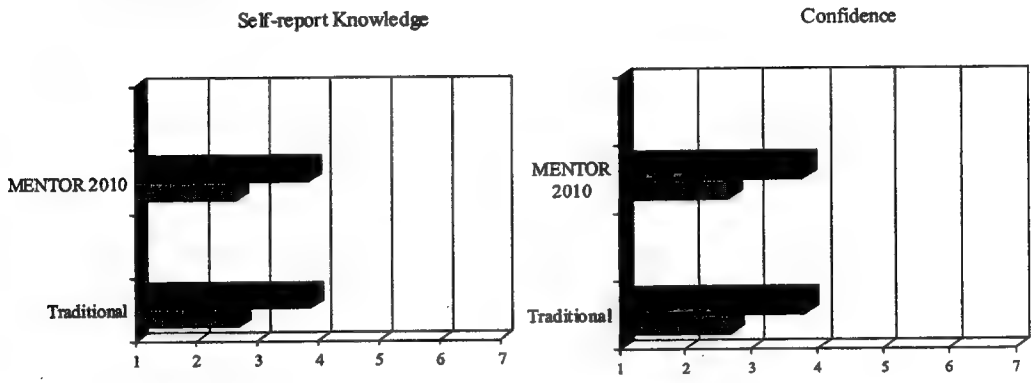

Figure 3. Average Pretest and Posttest Ratings for Meta-cognitive Items

FN/AET skills and meta-cognitive measures. Acquisition of FN/AET skills was assessed using the meta-cognitive measures and observational techniques. Data were collected from four equipment labs: MiniOx, Lifepak 10, Airborne Life Support System (ALSS), and MTP. Self-report knowledge and confidence ratings were collected three times—pre-lesson, post-lesson, and post-practice or delayed.

Figure 4 presents results for the meta-cognitive measures from the equipment labs. Significant increases in overall levels of self-report knowledge ($M_{PRETEST}$ = 2.2, $M_{POSTTEST}$ = 3.7, $M_{DELAYED\ TEST}$ = 5.0; $F(2, 276)$ = 214.3, p < .0001) and confidence ($M_{PRETEST}$ = 2.3, $M_{POSTTEST}$ = 3.5, $M_{DELAYED\ TEST}$ = 5.2; $F(2, 276)$ = 215.4, p < .0001) were found across time. As expected, self-report knowledge and confidence ratings showed continued increases after both training and practice.

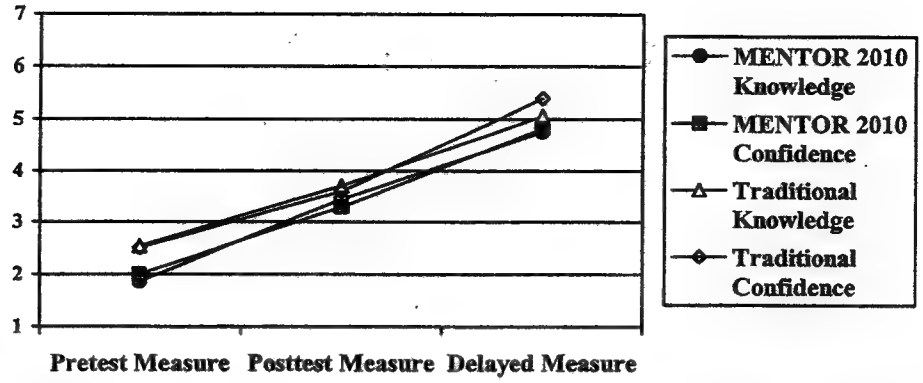

Figure 4. Overall Average Levels of Self-report Knowledge and Confidence (Equipment Labs)

Significant differences were also found between the two instructional approaches on overall average levels of self-reported knowledge [$M_{MENTOR\ 2010} = 3.3$, $M_{TRADITIONAL} = 3.9$, $F(1, 138) = 7.7$, $p < .006$] and confidence [$M_{MENTOR\ 2010} = 3.4$, $M_{TRADITIONAL} = 3.9$; $F(1, 138) = 9.1$, $p < .003$] for the equipment labs. The difference was not in the expected direction—the *Traditional* group rated their knowledge and confidence levels higher than the *MENTOR 2010* group.

FN/AET skills performance. The Targeted Acceptable Responses to Generated Events or Tasks (TARGETs) methodology developed by Dwyer, Fowlkes, Oser, Oser, & Lane, (1977) was used to analyze the observational data collected in the equipment labs. The TARGETs methodology was originally developed to meet a need for an evaluation technique for aircrew coordination training. TARGETs methodology focuses on skills processes and identifies deficiencies in performance, produces measurements that detect differences in performance levels, ties performance measures to the training objectives, and is appropriate for applied training situations.

Figure 5 shows an example of a TARGETs analysis output. The graph shows overall proportion of times that students, within the *MENTOR 2010* group and *Traditional* group, correctly performed steps to preflight the ALSS. The graph indicates the *Traditional* group was deficient in the first few steps of the procedure, checking the LED and alarms the first time then rechecking them after switching to battery power; the final two steps of checking the intravenous (IV) pole and mounting brackets. The *MENTOR 2010* group, like the *Traditional* group, was deficient in the first step of checking the calibration sticker and final two steps. The *MENTOR 2010* group was also deficient in securing and connecting the oxygen cylinder to the incubator.

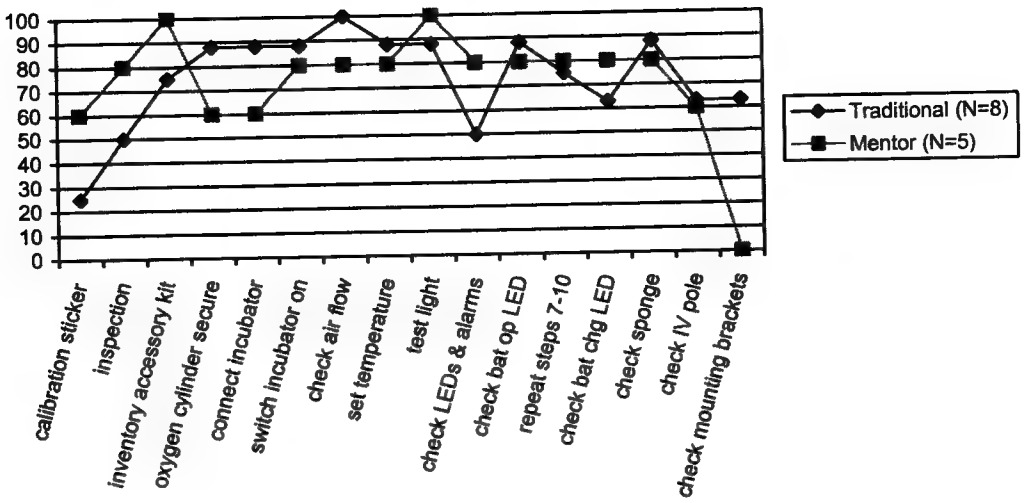

Figure 5. Graph Output from TARGETs Analysis of Skills Data Collected in the ALSS Equipment Lab

Formal achievement tests. No differences in performance were found among the flights on the four block tests or the six EPCs.

Training Assessment Survey. Results from the TAS are presented in Figure 6. Ten aspects of effective training were rated on a 7-point scale where "1" represented *less* of the aspect and "7" represented *more* of the aspect. Average ratings below 5 indicated where training needs improving. The 10 training aspects are presented along the x-axis in Figure 6.

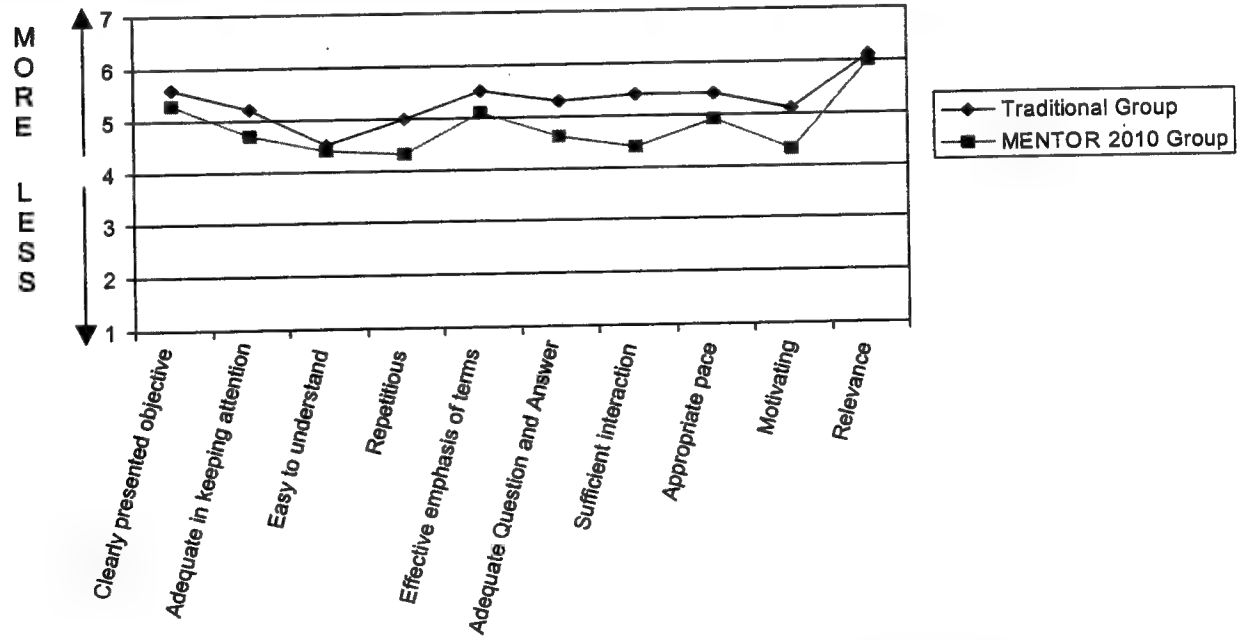

Figure 6. Training Assessment Survey Average Ratings by Instructional Group

The MENTOR 2010 courseware received significantly lower average ratings than traditional instruction on 8 of the 10 aspects of

effective training. No differences were found between the *MENTOR 2010* and *Traditional* groups for the following two items: *Easy to understand* ($M_{MENTOR\ 2010}$ = 4.4, $M_{TRADITIONAL}$ = 4.5) and *Relevance* ($M_{MENTOR\ 2010}$ = 6.0, $M_{TRADITIONAL}$ = 6.1). *Easy to understand* was the only training aspect rated similarly low by both groups. Further, it was the only training aspect in the "needs improvement" range for traditional instruction. Unlike traditional instruction, seven training aspects of the MENTOR 2010 courseware received unacceptable ratings.

Table 6 contains the overall results from the TAS for the individual lessons by group. Results show that approximately 70% of the MENTOR 2010 modules received average TAS ratings below the acceptable level. Within the MENTOR 2010 courseware, the Theater AE module received the lowest overall rating (M = 3.1) and lowest motivational rating (M = 2.3). The Abdominal Trauma module received the highest overall average rating (M = 5.4), although its average motivational rating fell below 5.

Approximately 19% of the classroom lectures received overall average TAS ratings below the acceptable level of 5. The Combat Casualty lecture received the lowest overall rating (M = 3.8) and lowest motivational rating (M = 3.8). The Neurology lecture received the highest overall average rating (M = 5.8) and highest motivational rating (M = 5.9).

Table 6 shows that both groups rated lesson relevance equally high ($M_{MENTOR\ 2010}$ = 6.0, $M_{TRADITIONAL}$ = 6.1). Previous research has suggested that lesson relevance impacts motivation to learn (Wenzel, Richardson, Halff, & Gibson, 1996). An examination of the relationship between relevance and motivation found a moderate to strong relationship for the *Traditional* group ($r_{RELEVANCE * MOTIVATION}$ = .30) and no relationship for the *MENTOR 2010* group ($r_{RELEVANCE * MOTIVATION}$ = .09).

MENTOR 2010 usability issue. Ease of navigating the interface, an item specific to the courseware TAS, received high overall ratings ($M_{MENTOR\ 2010}$= 6.0). Table 7 contains the item average ratings by lesson. The Respiratory Disorder module received the only unacceptable rating for ease of navigating (M = 4.4).

Table 6. Results from the TAS by Group

TAS ITEM	OVERALL		MOTIVATION		RELEVANCE	
Lesson Topic	MENTOR	Traditional	MENTOR	Traditional	MENTOR	Traditional
EENT	4.1	4.7	3.7	4.5	6.0	6.1
Patient Classification	4.6	5.3	4.1	4.8	6.5	6.3
Mental Health	5.2	5.3	5.1	4.8	6.1	6.3
Mission Irregularities	4.4	5.1	3.8	4.9	5.5	5.9
MTP	4.5	5.1	4.4	5.1	6.4	5.9
Lifepak 10	4.6	5.4	4.6	5.4	6.4	6.2
Personal Responsibilities	4.7	4.9	4.5	4.8	6.5	6.2
Respiratory Disorders	4.3	5.4	4.5	5.3	4.3	6.3
Airway Management	5.0	5.2	4.5	5.0	6.3	5.9
Pediatrics	4.9	5.6	4.4	5.4	5.7	6.5
Obstetrics	5.0	5.5	4.7	5.6	5.8	6.2
Stryker frame/Collins traction	4.4	5.3	4.0	5.2	5.6	5.6
Burns	5.2	5.6	4.8	5.2	6.7	6.1
Neurology	4.6	5.8	4.3	5.9	6.6	6.3
Cardiovascular Disorders	4.7	5.5	4.7	5.2	5.7	6.5
Orthopedics	4.6	5.6	4.2	5.1	5.9	6.4
Mini Ox III	4.4	5.0	3.8	5.0	5.4	6.3
ALSS	4.4	5.1	3.8	5.4	5.5	6.1
ECAS	5.4	4.9	4.4	4.7	6.6	6.1
Theater AE	3.1	4.9	2.3	4.6	5.9	5.9
Combat Casualty	4.1	3.8	3.8	3.8	6.1	5.8
PT Lox	5.3	5.7	5.3	5.8	6.6	5.9
Bear 33	3.9	5.1	3.3	5.1	5.4	6.4
Shock	4.6	5.6	4.2	5.3	6.1	6.4
Abdominal Trauma	5.4	5.1	4.3	4.7	6.3	6.1
GI/GU	5.2	5.2	4.4	5.3	6.2	5.9
TOTAL AVERAGE	**4.7**	**5.2**	**4.2**	**5.1**	**6.0**	6.1

Table 7. Average Ratings for Ease of Navigating the MENTOR 2010 Interface

Lesson Topic	Mean	Lesson Topic	Mean	Lesson Topic	Mean
EENT	6.6	Pediatrics	5.9	ECAS	6.3
Patient Classification	6.3	Obstetrics	6.1	Theater AE	5.3
Mental Health	6.4	Stryker /Collins	5.8	Combat Casualty	5.6
Mission Irregularities	6.3	Burns	6.3	PT Lox	6.0
MTP	6.3	Neurology	5.8	Bear 33	---
Lifepak 10	6.0	Cardiovascular Disorders	6.1	Shock	6.1
Personal Responsibilities	6.4	Orthopedics	5.8	Abdominal Trauma	6.1
Respiratory Disorders	4.4	Mini Ox III	5.6	GI/GU	6.3
Airway Management	6.3	ALSS	5.9	**TOTAL**	**6.0**

The scale used to estimate the frequency with which the buttons were used was anchored by *Never* (1) and *Always* (7). Overall, the WINGS button ($\underline{M}$ = 4.2) was used more often than the SAM button ($\underline{M}$ = 3.4). Students were given specific instructions with 11 of the modules to use the WINGS and SAM buttons. The specific instructions impacted student estimates of frequency using the WINGS ($\underline{M}_{TOLD}$ = 4.6, $\underline{M}_{NOT\ TOLD}$ = 4.0, $\underline{F}(1, 439) = 7.5$, $\underline{p} < .007$) and SAM buttons ($\underline{M}_{TOLD}$ = 4.3, $\underline{M}_{NOT\ TOLD}$ = 2.7, $\underline{F}(1, 437) = 58.7$, $\underline{p} < .0001$. However, neither the overall estimated frequency using the WINGS button ($r_{GAIN * WINGS} = .07$, $\underline{p}$ = NS) nor estimated frequency using the SAM button ($r_{GAIN * SAM} = .03$, $\underline{p}$ = NS) was significantly related to gains on achievement tests.

Preference for an instructional approach. Students expressed their preferences for receiving FN/AET training as classroom lecture or CBT before the evaluation. The results are presented below in Figure 7. Instructional approach preferences were expected to shift toward CBT, as a function of exposure to the self-paced, interactive courseware.

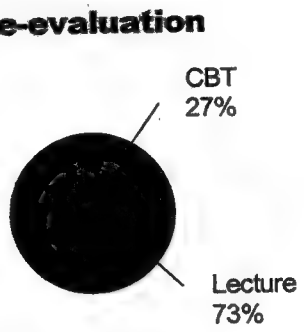

Figure 7. Instructional Approach Preferences Collected Before the Evaluation

Figure 8 presents overall group results for instructional approach preferences. Students chose between *computer-based training*, *instructor's lecture*, and *either way* at the end of each lesson. No differences were found between the two groups on the portions of preferences. This finding was unexpected. Preferences for CBT were expected to increase as a function of exposure to MENTOR 2010.

Traditional Group **MENTOR 2010 Group**

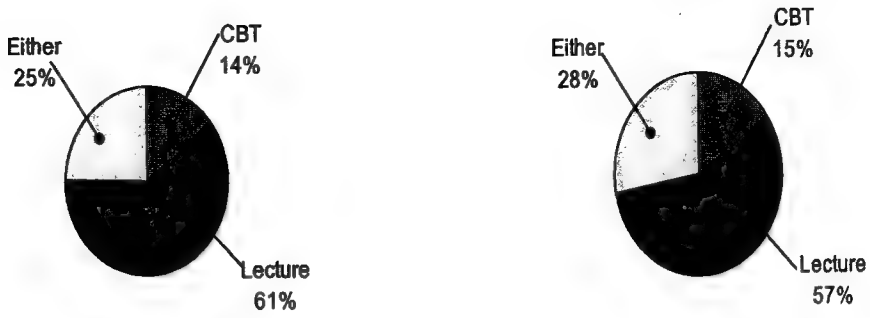

Figure 8. Instructional Approach Preferences by Group

Computer attitude survey. Results from the 9-item computer attitude survey are presented in Figure 9. Ratings were made on a 7-point scale where lower numbers represented *more agreement* with a statement and higher numbers represented *less agreement*. Thus, lower average ratings represent a more positive attitude toward CBT.

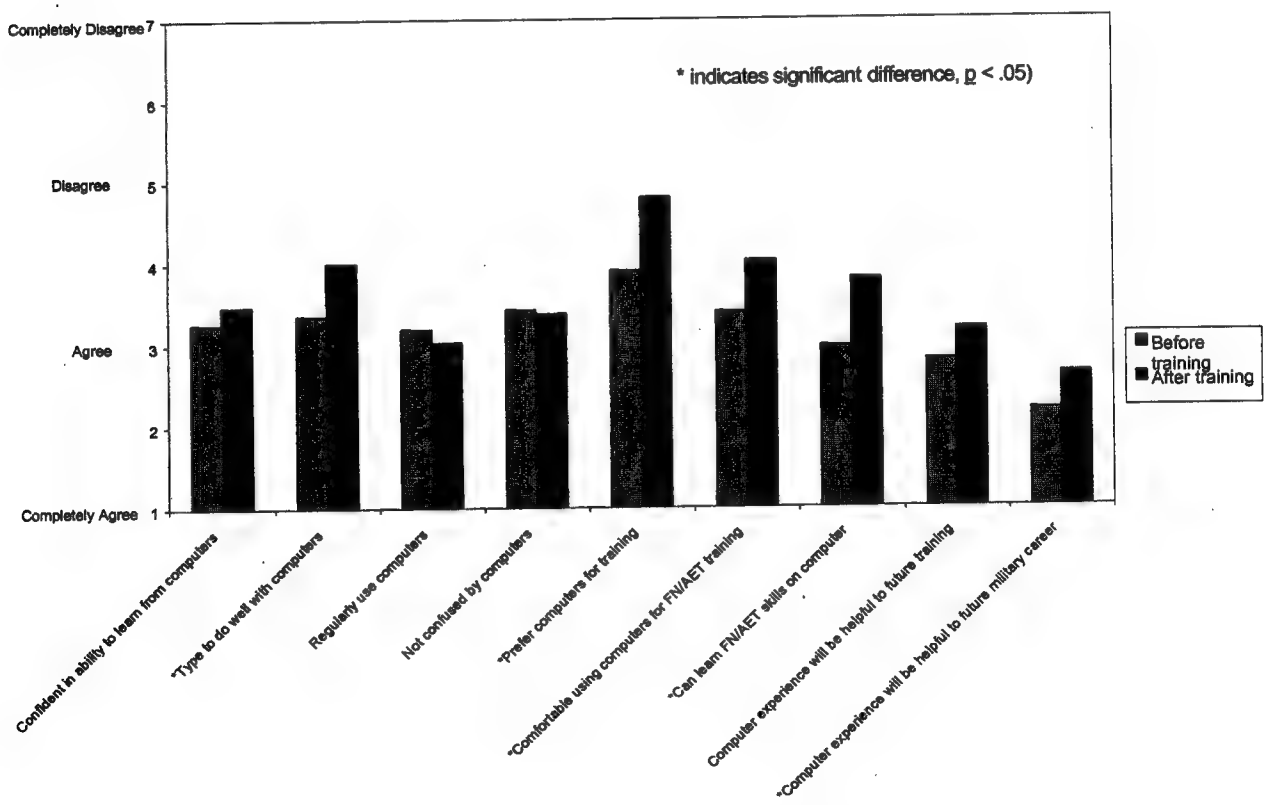

Figure 9. Pre- and Post-evaluation Results for the Computer Attitude Survey

Five items were rated significantly higher (less agreement) after the evaluation than before. The items are as follows: "I am the type to do well with computers." (M_{BEFORE} = 3.4, M_{AFTER}= 4.0, t(57) = 2.8, $p < .007$); "I prefer to use computers for my FN/AET training." (M_{BEFORE} = 3.9, M_{AFTER}= 4.8, t(57) = 3.7, $p < .0001$); "I feel comfortable with the idea of receiving FN/AET training from computers." (M_{BEFORE} = 3.4, M_{AFTER}= 4.0, t(57) = 2.8, $p < .007$); "I see how I can use computers to learn FN/AET skills." (M_{BEFORE} = 3.0, M_{AFTER}= 3.8, t(57) = 3.4, $p < .001$); and "Experience with computers will be helpful to my future military career." (M_{BEFORE} = 2.2, M_{AFTER}= 2.6, t(57) = 2.8, $p < .05$). The first four items showed student attitudes changing in a negative direction. Specifically, students expressed a preference for NOT using computers for FN/AET training.

Training Efficiency

It took students an average of 18.3 hours to complete 26 quasi-self-paced MENTOR 2010 modules. Time on task data for the Bear 33 ventilator lesson were missing for the *MENTOR 2010* group, due to a mix up in test booklets. The 26 corresponding classroom lectures lasted 21.4 hours. A 14% reduction in training time was found with MENTOR 2010 courseware.

A small but significant positive relationship ($r = .17$, $p < .01$) was found between time on task and gain in knowledge for the *MENTOR 2010* group. This suggests that more time spent with the courseware leads to more learning.

The *MENTOR 2010* group (M = 61.5 minutes) spent significantly more time in the equipment labs (ALSS, MiniOx, Lifepak 10, and MTP) than the *Traditional* group (M = 52.6 minutes; $t(137) = 3.0$, $p < .003$).

Instructional Design

Analyses of the two instructional approaches were conducted to elucidate similarities and differences between the MENTOR 2010 modules and corresponding units of instruction in the FN/AET course, separate from the effects of instructional strategies. Table 8 contains a summary of results from the analysis.

Lecture versus courseware. Based on the information in Table 8, MENTOR 2010 courseware provided some learning benefits not equaled by traditional lockstep instruction. The most notable was that every student was actively involved in learning. During traditional instruction, it was possible for a student to not answer a single question or interact with the lesson information at all. This was not possible with the MENTOR 2010 courseware because students had to complete certain interactions, such as questioning, in order to advance.

Questioning in the MENTOR 2010 courseware required interaction, however, it was insufficient for learning. Module questions, on the whole, were poorly designed, few and far between, and mainly required the student to recognize facts or concepts. There were very few questions that evaluated the student's comprehension of lesson material.

Table 8. Results of the Analyses of the Two Instructional Approaches

Area	Traditional Lockstep Instruction	MENTOR 2010 Courseware
Interaction *Number of Questions*	Number and level of questions highly dependent upon the course instructor.	Number of questions consistent from unit to unit. Level of questions consistent with lesson content (procedural/application, declarative/knowledge)
Level of Questions	Students called out answers to questions. It was possible for students to pass through the class without answering a single question.	Every student had to answer every question before advancing.
Time on Task *Active vs. Passive*	Time on task was used effectively. Lecture time was nearly 100% passive, with the only activities including the possible taking of notes on an interactive study guide and calling out of instructor questions. During hands-on instruction, opportunities were presented to encourage students to be actively involved in learning. Some students became actively involved while others remained passive.	Time on task was used effectively. Most of the time was spent with straight information delivery, where the only interaction was the continue button. However, embedded questions and practical exercises insured that every student was actively involved in the learning process. The disks provided guided simulations, which required the students to click on or interact with highlighted aspects of the equipment.
Guided Behaviors *Use of Examples*	Lecture provided and encouraged students to provide real life examples or "war stories" of the application of the information discussed in class.	Use of real life examples in the modules was rare. The WINGS button occasionally provided real life examples.
Referring to prior learning	Less than one reference to prior learning was made per class.	No references to prior learning were noted.
Feedback	Question feedback was evaluative. It basically consisted of silence, "No," "Uh huh," or "Okay." Students infrequently received feedback on the skills they were practicing. Instructors did not regularly observe or provide feedback on students' interactions with the equipment.	Evaluative feedback was used--correct answers to multiple-choice questions were indicated by a green line around a textual feedback box and/or a "ding ding" bell sound, while incorrect answers where met with silence and a black line around the textual feedback box. The textboxes restated information regarding the correct answer. During the guided simulations, students were usually given three chances to perform the correct action. If the action was not performed, a textual indication was given to the student. Upon completion of the action, the student advanced to the next step or part of the lesson.
Course Content *Use of Graphics*	The majority of lectures had embedded photos in order to highlight lesson points.	Modules contained a large quantity of graphics and videos that highlighted the lesson topics.
Use of Advanced Organizer/summaries	The majority of lectures included lesson sample behaviors, learning objectives and/or a topical outline in the beginning of the course. The majority also included a summary or wrap up slide. Lectures did not consistently inform the students of the importance of the information to be learned or provide a motivational segment to start lessons.	All but two modules included learning objectives in text and/or audio format. All modules included an introductory segment, which emphasized the importance of the material about to be covered.
Cooperative Learning	Students worked in groups during hands-on instruction and equipment labs.	No cooperative learning took place.

Feedback for incorrect answers was also found to be inadequate because it did not explain the response.

Questions posed in lectures often required students to "parrot" information that was presented to them earlier in the lecture. For the most

part, responses called out by the students received nonspecific feedback that may or may not directly relate to the answer.

There were some significant areas where traditional instruction was clearly superior to the MENTOR 2010 courseware. Course instructors provided first-hand examples of field experiences related to the information presented in lecture. On occasion instructors also invited students to share similar information. This not only tended to increase student motivation it also informed students how the information they learned was to be applied.

In the MENTOR 2010 interface the WINGS button was designed to provide first-hand examples of field experiences related to information presented in the module. Unfortunately, in most cases, the intention of the WINGS button was not realized. The WINGS information often repeated what had already been presented in the module. WINGS information failed to contribute to training effectiveness and failed to inform students how the information they learned was to be applied.

Hands-on versus simulation. Students who were assigned to traditional hands-on training had the opportunity to work with the equipment in a trial-and-error manner. If they made a procedural mistake, an alarm would sound, the equipment would behave improperly, or some other form of authentic feedback would come directly from the equipment. Students assigned to MENTOR 2010 equipment modules were denied this type of learning experience. The guided simulation format used in the courseware clearly directed the student to take the proper action, thereby lessening the amount of thought required by the student. Given this lowered amount of cognitive activity, retention of the information is likely to be lessened.

Students using the MENTOR 2010 equipment modules also missed the cooperative learning and peer teaching that was employed with the traditional hands-on training

Learning objective similarity ratings. Interrater reliability was high (r = .92) for the 10 FN/AET course instructors who completed the learning objective ratings. Table 9 contains the percent of instructors in agreement on the "similarity" between 28 pairs of learning objectives.

Table 9. Percent of Responses in Learning Objectives Ratings Categories by Lesson

("D" = Dissimilar, "S" = Similar, and "I" = Identical)

Lesson Topic	D	S	I	Lesson Topic	D	S	I	Lesson Topic	D	S	I
O&O	.1	.6	.3	AE Forms	.1	.8	.1	Pulse Ox	.3	.5	.2
EENT		.3	.7	Pediatrics		.4	.6	ECAS		.5	.5
Patient	.3	.7		Obstetrics		.1	.9	Theater AE		.2	.8
Mental Health	.1	.5	.4	Stryker /Collins		.4	.6	PT Lox	.3	.7	
Mission		.3	.7	Burns		.3	.7	Bear 33	.1	.4	.5
MTP		.2	.8	Neurology		.2	.8	Shock	.7	.3	
Lifepak 10		.6	.4	Cardiovascular	.2	.7	.1	Abdominal		.2	.8
Personal		.5	.5	Orthopedics		.3	.7	GI/GU		.2	.8
Respiratory			1.0	Mini Ox III	.1	.7	.2				
Airway	.7	.2	.1	ALSS	.8	.2					

Nine pairs of lesson objectives from the modules evaluated were judged to be dissimilar by some portion of FN/AET course instructors. However, there is no pattern in the instructors' dissimilarity ratings that helps to explain the results from the evaluation.

Question tally sheets. Course instructors kept track of student questions asked in the computer lab. Content questions were asked during 7 of the 27 modules evaluated. The module topics and questions are listed in Table 10.

Table 10. Questions from the Computer Labs by Modules Topic

EENT	PERSONAL RESPONSIBILITIES	AIRWAY MANAGEMENT
• Is it O.K. for assessment to go from eyes to ears? • What does preflight assessment include? • Did not know how to answer questions.	• Clarification of Dead Lead Time. • What is a mission not from a home station? • There are restriction from flying after being in the chamber? • What is an aircraft pressurization check?	• Should the connection of oxygen tubing to ventilation bag be a reserve bag? • Why check ETT cuff for changes when filled with saline?
MENTAL HEALTH	**MISSION IRREGULARITIES**	**OBSTETRICS**
• Please clarify APT and removal of jewelry--watch, wedding band?	• What is the patient classification? • What is an Urgent/Priority difference?	• Why are the old forms still on the program? • What about "hands on" training?
MINIOX	**SHOCK**	
• Does the entire analyzer go into ALSS?	• Form A, question #3, there is no correct answer.	

Discussion

The MENTOR 2010 courseware is able to produce knowledge gains in FN/AET students that equal knowledge gains produced by traditional classroom instruction. Students receiving FN/AET instruction as MENTOR 2010 courseware show the same level of awareness of their AE knowledge and confidence in applying that knowledge as students trained in the classroom. FN/AET students, whether training with the MENTOR 2010 courseware or in the classroom, show no preference for CBT.

Differences found between Mentor 2010 courseware and traditional classroom instruction are summarized in the table below. Based on a review of the CBT literature, in particular Kulik's (1994) meta-analysis, we anticipated that students using the Mentor 2010 courseware would perform better on the achievement tests, learn in less time, and be more motivated to learn.

	MENTOR 2010 (Average)	Traditional (Average)	Difference
Achievement (Post-test score)	7.53	7.45	.08
Achievement (Gain Score)	2.24	2.18	.06
Time savings (minutes)	1097	1282	181
Motivation (TAS item)	4.25	5.09	-0.84

We compared the results from the MENTOR 2010 courseware evaluation to standards obtained by Kulik (1994). The standards provide an estimate of expected effectiveness, efficiency, and motivational level for the MENTOR 2010 courseware. The expected and actual results are summarized in the following table.

	Expected Results (Kulik, 1994)		Actual Results (MENTOR 2010)	
Achievement (Post-test score)	.35 S.D.	50→64 Percentile	.03 S.D.	50→51 Percentile
Achievement (Gain Score)	.35 S.D.	50→64 Percentile	.02 S.D.	50→51 Percentile
Time Savings (minutes)	24%-34%	307-436 min	14%	183 min
Motivation (Training assessment item)	.28 S.D.	50→62 Percentile	-1.71 S.D.	50→5 Percentile

The comparison suggests that the MENTOR 2010 courseware is far inferior to other CBT in overall gains in achievement, reduction in training time, and ability to motivate students. Potential explanations for the results are discussed next, before presenting recommendations for improving the instructional design of the MENTOR 2010 courseware.

The finding that MENTOR 2010 students did not outperform the traditional students, coupled with the low motivational ratings given the courseware, could be due to any of the following:

- FN/AET students' expectations were not met,
- MENTOR 2010 software was unreliable,
- Courseware was quasi-self-paced,
- Insufficient exposure to MENTOR 2010 courseware,
- Achievement tests had low construct validity, and
- Courseware needs improving.

FN/AET student expectations. Students came to the schoolhouse expecting FN/AET training as it is traditionally taught. Students were not forewarned that they would be participating in the MENTOR 2010 evaluation project. Participating in the project involved receiving a portion of their FN/AET training on computers. The low motivational rating given the courseware could reflect disappointment from the training experience not meeting students' expectations. In addition, students may have felt that *they* were being evaluated rather than the courseware. One student alluded to this during the debriefing when he voiced displeasure in being taped.

Unreliable software. Problems with the MENTOR 2010 software occurred throughout the evaluation. The main software problem involved errors in accessing video files. The problem was inconsistent across computers, although, it persisted within all modules. Students' solutions to the video file problem were either to search the directories for the file and access it or skip the video. Either solution was a distraction to learning and likely had a negative impact on motivation.

Quasi-self-paced courseware. MENTOR 2010 courseware was designed to be self-paced. However, during the evaluation students were encouraged to complete modules within the time frame corresponding to the lecture. Expecting the students to complete the courseware in the allotted time may have negatively affected the students' "normal" learning pace, hence, their achievement scores.

A better test of the training advantages offered by self-paced instruction would involve reorganizing the FN/AET course. The reorganization would result in the 30 modules that make up the MENTOR 2010 courseware being presented as a consecutive block of training (see the "ideal situation" in Figure 1). The total amount of time, approximately 35 hours, taken by the slowest students to complete the courseware provides an estimate for the length of the MENTOR 2010 block.

Validity of achievement tests. It is possible that the evaluation protocol failed to capture learning. *Learning* is defined as a relatively permanent change in behavior as a result of experience. The evaluation protocol called for administration of the achievement posttest immediately after instruction. The achievement posttests may not have been measuring learning. Potentially, the posttests may have been measuring "temporary changes in behavior," instead of learning.

No measure was available that tapped into a "relatively permanent change in behavior." The formal block tests could not be used in the evaluation because the MENTOR 2010 and Traditional students studied together in preparation for the tests. A knowledge retention test is needed to better measure the training effectiveness of the MENTOR 2010 courseware. The retention measure should be included in subsequent evaluations; although, it is a costly prospect to track FN/AET graduates back to their units.

Courseware needs improving. The most obvious explanation for the findings that the MENTOR 2010 courseware produces below standard performance, below standard time savings, demotivates students, and negatively impacts student attitudes is that the instructional design of the courseware needs improvement. Recommendations for the improvements are found in the next section.

Insufficient exposure to the MENTOR 2010 courseware. The difference in attitudes toward MENTOR 2010 between the pilot evaluation class and formative evaluation class suggests that the latter class was not sufficiently exposed to the courseware.

The following table shows the percents from the two evaluation classes that would prefer to have the FN/AET lessons as CBT. The total average percents, found on the last line of the table, suggest that repeated exposure to the courseware increases its acceptability. Recall that the pilot evaluation students received 29 of the 30 MENTOR 2010 modules and 47% of them preferred FN/AET lessons as CBT. Whereas, the formative evaluation students received only 9 of the 30 modules and only 15% of them preferred FN/AET lessons as CBT.

PERCENTS OF EVALUATION CLASSES PREFERRING FN/AET LESSONS AS CBT				
	Pilot Evaluation		Formative Evaluation	
Lesson Topic	MENTOR	Traditional	MENTOR	Traditional
Organization and Operation	21	11	—	—
AE Forms	44	10	—	—
EENT	—	—	25	14
Patient Classification	57	6	0	32
Mental Health	50	0	17	32
Mission Irregularities	50	11	10	8
MTP	61	14	25	17
Lifepak 10	56	12	13	14
Pulse Ox	36	12	—	—
Personal Responsibilities	68	29	28	12
Respiratory Disorders	54	14	17	14
Airway Management	41	10	19	12
Obstetrics	59	11	0	11
Stryker frame/Collins traction	30	9	21	22
Burns	57	13	47	6
Neurology	55	17	21	10
Cardiovascular Disorders	60	22	11	24
Orthopedics	61	9	0	9
Mini Ox III	35	8	11	23
ALSS	33	8	10	18
ECAS	47	11	22	24
Theater AE	11	8	0	0
Combat Casualty	26	22	6	18
PT Lox	31	4	35	6
Bear 33	29	12	5	14
Shock	80	15	20	15
Abdominal Trauma	56	15	24	15
GI/GU	23	17	18	5
TOTAL AVERAGE	**47.1**	**12.9**	**15.4**	**14.5**

Field evaluation of the MENTOR 2010 courseware. The next stage in the evaluation process can go in several directions. If the courseware is not improved upon, then it should be evaluated in the field with potential FN/AET students. If the courseware is improved upon, then it should be evaluated in the schoolhouse under the following conditions: (a) incoming students are notified before training that they have been selected to evaluate the courseware as part of the FN/AET course, (b) reliability of the software is established, (c) MENTOR 2010 modules are presented as a week-long block of instruction, (d) all students receive all modules, and (e) retention measures are included in the evaluation protocol. Otherwise, the improved courseware should be evaluated under field training conditions. Recommendations for making improvements are presented next.

Recommendations for Improving Courseware

There are weaknesses in the Mentor 2010 courseware that may account for its failure to meet expected outcomes. Following is a list of improvements that should increase achievement scores, decrease learning time, and increase motivation.

Copyright

Potential copyright infringements (text, bitmaps, and audio-visuals) must be resolved. Copyrighted materials need to be replaced or copyright releases acquired.

Target System

The current target system is a specialized MENTOR 2010 workstation running Microsoft Windows 3.1 and Microsoft Access. Unfortunately technology has changed since the target system was defined. Hardware and software required to build a MENTOR 2010 system are no longer available. Therefore, new specifications for the target system should require a Pentium-class desktop with a minimum of 16 MB memory, 12X CD-ROM, generic video card, and generic sound-blaster compatible sound card. New specifications for the operating system should require Microsoft Windows 95/98 and Microsoft Access 95/98.

The courseware source code needs to be converted to run in a Windows 95/98 environment. The conversion to Windows 95/98 and Access 95/98 requires upgrading Authorware 3X source code to Authorware 4X.

Software Testing

Current MENTOR 2010 software is not reliable. A software and hardware testing plan needs to be developed to test MENTOR 2010 courseware on a variety of desktop systems similar to those found in the field.

Navigation

The graphical user interface needs to be consistent and incorporate conventions. Students had trouble knowing where they were in a lesson and moving through a lesson. There were many instances that required a student to select an item in a menu. Once the selection was made the program branched to a new section and eventually returned to the selection menu without marking the section as completed. Since menu selections were not marked, students unnecessarily repeated instruction.

Modules need to be indexed so that a student can access and review material that they do not fully understand. In addition, there needs to be a feature that allows a student to "skim" through material they have already studied.

Advanced Organizers, Lesson Objectives, and Summaries

All modules should begin with an advanced organizer. An advanced organizer facilitates learning by providing a framework and organization schemata to which a student can integrate module information. Advanced organizers prepare students to understand the relationships among the information and concepts in the module. Advanced organizers also aid the integration of new knowledge with existing knowledge.

Objectives should be found in the module introduction and include:

1. Descriptions of operational conditions,
2. Desired performance or samples of behavior,
3. Performance standards, and
4. Information on the evaluation instrument.

Each module should end with a summary using SAM that concisely reviews the subject matter covered in the module.

Questions

More questions and different types of questions are needed in the MENTOR 2010 courseware. The timing of questions has different effects on the organization of knowledge. Pre-questions influence learning of material that contains the solution, but at the same time reduce the student's retention of other material. Post-questions influence the learning and retention of related material as well as material specific to the questions. Pre- or post-questions that are broad or interpretive facilitate learning while narrow or factual questions tend to overly focus students' attention on the exact answers specified in the question.

Most of the questions found in MENTOR 2010 courseware are recognition questions. Recognition questions might require identification of correct facts, correct definitions, or correct examples. Different types of questions produce different effects and require different cognitive skills. For instance, recall questions require the student to supply rather than recognize the correct answer. Comprehension questions require the student to identify rules and applications, steps and sequences, explanations, restatements, conclusions, and classifications. All types of questions should be used in the modules to facilitate learning.

Irrespective of question type the student should always receive performance feedback. Understanding students' processes of attending to, interpreting, and acting on feedback is critical. Elaborative feedback should be used to keep the student on course and stimulate greater effort.

Display aids/Directing student attention

Modules should incorporate cosmetic and informational cues to emphasize important information. Students do not seem to be able to skip over details and select only important information because there is rarely an obvious basis for accepting a statement as important or rejecting it as unimportant.

Cosmetic and information cues should be used consistently and follow existing conventions. Students become aware of the cosmetic aspects (e.g., color, font, inversing, flashing, highlighting, zooming, panning) and use them to identify important information. Students also become aware of information-based cues (e.g., advanced organizers, repetition, directed recollection, questions, and concept maps) and use them to identify important information.

Audio

Currently, the audio presented in MENTOR 2010 is mainly used to repeat what is already on the screen. A better use of audio in the nursing assessment lessons would be to direct the student's attention to important information on the screen. For instance, in the equipment lessons, the audio should be used to "walk" the student through a procedure.

WINGS Button

The concept of the WINGS button is a good one and should remain in the courseware. However, the current content and framing of the WINGS videos are poor, which helps to explain why many students avoid using WINGS. WINGS, almost without exception, repeated information found in the text on the screen.

The WINGS button could better be used for demonstrations and sharing first-hand knowledge and experience. The videos are not "framed" to accentuate the activity or equipment being emphasized. It seems that the videos were not carefully planned. They were shot at a distance with little variation in perspective irrespective of instructional goals. The WINGS video is $^1/_8$ screen size making it difficult for students to see details that may be key to mastering the subject matter. WINGS video should

be shot from varied perspectives based on the instructional demands. The video should be at least ¼ screen size.

Simulations

The MENTOR 2010 courseware could be improved by including simulations that allow the student to assemble and disassemble equipment and practice procedures. The approach currently used to simulate equipment in MENTOR 2010 courseware restricts students to following instructions. Students are not allowed to freely explore the simulated equipment. Improved simulations allow students free range, where they can make errors, see the consequences of the errors, and receive feedback on their performance. Simulations can be developed using USAF simulation tools such as RIDES or commercial tools such as RAPID. Both RIDES and RAPID are capable of generating graphical simulations and tutors that work in the context of the simulation.

Glossary of Terms and Acronyms

Terms and acronyms used in the modules are unfamiliar to many FN/AET students. A glossary of hypertext links should be included in the courseware. Students should be able to hover over a term or acronym in the text and the definition of that term or acronym should appear in a text box on the screen. The process should also work in reverse. A student should be able to select a term in the glossary and jump to the location in the courseware that covers that term.

Annoyance Factor

Some of the scenarios designed to maintain attention (i.e., the Star Wars style characters or Ragnar the Viking) have a high annoyance factor. The annoyance factor distracts from learning. Replace the characters with "real" people doing "real" tasks. The use of "real" people doing "real" tasks should both keep students' attention and increase motivation.

Student Handouts

The current handouts, which are based on the classroom lectures, do not follow the MENTOR 2010 course structure. Handouts are needed that parallel the MENTOR 2010 courseware. MENTOR 2010 handouts will facilitate student learning, reduce frustration, and decrease the time necessary to complete the MENTOR 2010 courseware.

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APPENDIX A

Table of MENTOR 2010 Modules

and

Corresponding FN/AET Course Units of Instruction

CD	MENTOR Module	MENTOR Objective	Block Title	Unit of Instruction	POI Objective	POI Lecture Time	POI Other Time	POI Location
Disk 01.2	**Organization and Operation of AE System**	***Review the Aeromedical Evacuation System, its mission, advantages, theatres of operation, major command roles and responsibilities, force structure, squadrons, patient regulating and airlift coordination process, crew composition, and support agencies.***	Introduction to AE	**Organization and operation of USAF AE**	Explain the organization and operation of the AE system	2		BO5:U01
Disk 01.3	**Theater AE System**	***You will learn the characteristics of TAES including: its components and functions, its organization, staffing and capability. You will also learn how the system operates and how its elements interact within the theater of operation.***	Introduction to AE	**Theater AE**	Identify the components, operation, and functions of the Theater Aeromedical Evacuation System	2		B05:U02
Disk 09.2	**Combat Casualty**	***Describe the process involved in moving combat casualties form the forward to rear Medical Treatment Facilities (MTFs) by means of the Theater Aeromedical Evacuation (TAES).***	Introduction to AE	**Combat Casualty Evacuation**	Explain and give examples of the processes involved in moving casualties from the combat zone to rear medical facilities by means of the TAES	1		B05:U03
Disk 02.1	**AE Forms**	***Describe the use of the forms required in AE and the methods for completing the information on the forms, specifically you will demonstrate samples of behavior.***	Mission Management	**AE Administrative Forms**	Identify the use of and the methods for completing information found on forms used in Aeromedical Evacuation	2	1	B07:U01
Disk 10.2	**Mission Irregularities**	***Identify the AECM's actions and responsibilities for selected mission irregularities.***	Mission Management	**Mission Irregularities**	Identify the AECM's actions and responsibilities for mission irregularities	1		B07:U04
Disk 02.2	**Patient Classification**	***1. Describe the patient classification and movement precedence system and its implications for aeromedical evacuation 2. Identify the appropriate aeromedical evacuation crew member (AECM) responsibilities for a prisoner under guard***	Mission Management	**Patient Classification and Considerations**	Determine the patient classification and movement precedence system and its implications for aeromedical evacuation.	2.5		B07:U06
Disk 03.3	**Personal Responsibilities**	***Identify the flight responsibilities and limitation of aeromedical evacuation crew members.***	Personal Responsibilities	**Personal Responsibilities**	Identify the flight responsibilities and scheduling restrictions of aeromedical evacuation crew members	2		B08:U01
Disk 09.1	**Combat Abdominal**	***Identify the basic principles of patient care for a patient with abdominal trauma.***	Contingency Operations	**Combat Abdominal**	Identify the basic nursing management principles for patients with abdominal trauma	1		B09:U07
Disk 06.2	**Burns**	***Recognize the preflight and in-flight care management of severely burned patients.***	Inflight Nursing Considerations	**Burns**	Identify the appropriate preflight and inflight patient care management of the severely burned patients	1.1		B010:U04
Disk 07.3	**Neurological Disorders**	***Describe the appropriate preflight and in-flight management of patients with neurological disorders.***	Inflight Nursing Considerations	**Neurological Disorders**	Identify the preflight and inflight management of patients with neurological disorders	1.1		B010:U05

Disk 08.2	**Respiratory**	***Identify the appropriate preflight/in-flight nursing care to provide respiratory patients.***	Inflight Nursing Considerations	**Respiratory Disorders and Airway Management**	Identify the appropriate preflight and inflight nursing care of respiratory patients	2.4		B010:U06
Disk 03.1	**CVD**	***Describe the preflight and in-flight management of patients with cardiovascular disorders***	Inflight Nursing Considerations	**Cardiac Disorders**	Summarize the preflight and inflate patient care requirements and the effects of the stresses of flight, for patients with cardiovascular disorders	1		B010:U07
Disk 05.1	**Orthopedics**	***Describe the appropriate preflight and in-flight management of the orthopedic patient.***	Inflight Nursing Considerations	**Orthopedics**	Identify the preflight and inflight management of the orthopedic patient	1		B010:U08
Disk 04.3	**Obstetrics**	***Describe the appropriate preflight and in-flight management of the OB patient.***	Inflight Nursing Considerations	**Obstetrics**	Identify the appropriate preflight and inflight management of the obstetrical patient	1		B010:U09
Disk 04.4	**Pediatrics**	***Describe the principles of preflight and in-flight pediatric nursing care and management.***	Inflight Nursing Considerations	**Pediatrics**	Identify the preflight and inflight management of the pediatric patient	1		B010:U10
Disk 07.2	**GI/GU**	***Describe the appropriate preflight and in-flight nursing management of the GI/GU patient.***	Inflight Nursing Considerations	**Gastrointestinal/ Genitourinary (GA/GE)**	Identify the appropriate preflight and inflight nursing management of the GI/GU patient	1		B010:U11
Disk 09.4	**Shock**	***Comprehend the appropriate in-flight nursing measures for a patient in shock.***	Inflight Nursing Considerations	**Shock**	Distinguish between hypovolemic, cardiogenic and distributive shock	1		B010:U12
Disk 08.1	**EENT**	***Describe preflight/in-flight nursing considerations for patients with EENT disorders.***	Inflight Nursing Considerations	**EENT**	Identify preflight and inflight nursing care needs for patients with EENT disorders	1		B010:U13
Disk 10.1	**Mental Health Problems**	***Accurately state the principles of nursing management for patients with psychological disturbances and victims of disasters and plan for their appropriate care within the aeromedical evacuation system.***	Inflight Nursing Considerations	**Mental Health**	Identify the principles of nursing management with the aeromedical evacuation system for patients with psychosocial disturbances and/or victims of disaster	0.5		B010:U14
Disk 10.3	**Operating Medical Equipment**	***Assemble a chest drainage unit and attach a Heimlich valve, IAW U.S. Air Force Reserve PDC AE Equipment checklist, with 70% accuracy. Demonstrate the proper procedure, using a Politzer Bag, for clearing an ear block, IAW U.S. Air Force Reserve PDC AE Eq***	AE Equipment	**Pulse Oximeter, Heimlich Valve, Chest Drainage Unit, Politzer Bag, and Restraints**	1. Given a BCI 1040 Pulse Oximeter and the use of references, properly preflight the pulse oximeter … 2. Given a Heimlich Valve, a chest draining unit and the use of references, properly assemble the chest unit and attach the Heimlich valve…	2	2	B11:U01
Disk 05.2	**Stryker/Collins**	***Safely turn a weighted mannequin on a Stryker A-frame. Safely transfer a weighted mannequin on a Stryker A-frame from swinging weights to a Collins traction device.***	AE Equipment	**Styker "A" Frame**	1. Given a weighted mannequin on a Styker "a" Frame and with the use of references, safely turn the mannequin…2. Identify the proper enplaning and deplaning consideration for a patient on a Styker A Frame …	0.5	1.5	B11:U03
Disk 04.1	**ALSS**	***Describe the characteristics of the ALSS.***	AE Equipment	**Airborne Life Support System (ALSS)**	Given an Airborne Life Support System and with the use of references, preflight the ALSS IAW the US Air Force Reserve PDC Equipment Guide checklist the 70% accuracy	1		B11:U04

Disk 04.2	**Minox III Oxygen Analyzer**	***Preflight the MiniOX III oxygen analyzer, using references and IAW AFRES PDC equipment guidelines, with 70% accuracy. Describe how to operate the MiniOx III oxygen analyzer.***	AE Equipment	**MinoxIII Oxygen Analyzer**	Given a Minox III Oxygen Analyzer, an E or H type oxygen cylinder and with the use of references, calibrate, monitor and adjust oxygen concentrations to 100% IAW the US Air Force Reserve PDC Equipment Guide checklist with 70% accuracy	1		B11:U05
Disk 03.2	**LifePak 10 Cardiac Monitor**	***none stated***	AE Equipment	**Operate Cardiac Monitors**	Given a cardiac monitor, an adult mannequin, and all necessary accessories and without he use of reference, power up the cardiac monitor, attach the patient leads into the lead II configuration and verbalize the defibrillation procedures IAW ……..	1		B11:U06
Disk 06.1	**Bear Vent**	***Given a Bear Ventilator, a 110-120 VAC/60 Hz power source, a test lung and use of references, properly preflight the Bear 33 Ventilator IAW the US Air Force PDC AE Equipment checklist with 70% accuracy. Explain how to use the Bear 33 Ventilator during ae***	AE Equipment	**Bear 33 Ventilator**	Given a Bear 33 ventilator, a 110-120 VAC/60 cycle power source, a test lung and with the use of references, properly preflight the Bear 33 ventilator …….	2	1	B11:U07
Disk 09.3	**MTP**	***Set up and operate the MTP Infusion Pump, IAW AFRES PDC AE Equipment Checklist, with 70% accuracy. Identify controls and indicators, and know how to preflight, set up, operate, and clean/store the MTP.***	AE Equipment	**MTP Infusion Pump**	Given an MTP infusion pump, IV accessories and with the use of references, properly preflight and operate the infusion pump …….	1	1	B11:U08
Disk 07.4	**Pt LOX**	***Outline the preflight and in-flight considerations for the PT LOX.***	AE Equipment	**PT LOX**	Given a PT LOX with accessory kit on an aircraft trainer, properly preflight, assemble and operate the unit with use of references…..	1		B11:U09
Disk 07.1	**ECAS**	***IAW Air Force Reserve PDC AE Equipment checklist, be able to preflight, assemble and operate the ECAS with 70% accuracy. Outline the preflight and in-flight considerations for the ECAS.***	AE Equipment	**ECAS**	Given an ECAS, a 110-120 VAC power source and the use of references, properly preflight, assemble and operate the ECAS …..	1		B11:U10
Disk 08.3	**Suction/Laerdal**	***Given a Laerdal Manual Resuscitator (Adult, Child, Infant), properly assemble and operate the resuscitator, IAW the AFRES PDC AE Equipment checklist with 100% accuracy. On the Laerdahl Manual Resuscitator, comprehend the (1) components, (2) preflight…***	AE Equipment	**Impact Suction Unit**	Given a 308M suction Unit and a 110-120 VAC power source, properly power up and set suction parameters without the use of references……	0.5		B11:U11
Disk 01.1	**Courseware orientation**	***In this orientation you will learn the screen display and how the information is presented; the interaction methods to complete course requirements...***	N/A	**N/A**	N/A			

APPENDIX B: FN/AET Course - Transition Schedule

Class 971024

DATE	DOT	HOUR	CLSRM	SUBJECT	Instructor	Special Instructions
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		0915-1130	BAY	Aircraft Walk-through / Principles of Inflight Nursing Care / Inflight Kits	SP/CR/(JR)/ CC	B820
		1130-1230		Lunch		
		1230-1320	AUD	Crew Resource Management	KB	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

DATE	DOT	HOUR	CLSRM	SUBJECT	Instructor	Special Instructions
7 Nov 97	11	0730-0900	AUD	Test 2 and Review	CC/EL	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		1010-1100	AUD	Echelons of Care	KB	
		1100-1130		Class Photo		
		1130-1230		Lunch		
		1230-1300	AUD	Student-Faculty Advisory Time/EPC Skit	AN Staff	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

DATE	DOT	HOUR	SUBJECT/CLSRM/Instructor		
10 Nov 97	12	0730-0820	**OSCAR** C-9 Orientation A /B820 MO/KB	[illegible]	**ROMEO** Litter Lab 1 (Basic Lecture) BAY/B820 JR/JB
		0830-0920	C-9 Orientation A MO/KB	[illegible]	Litter Lab 1 (C-141 Load) BAY JR/JB
		0930-1020	C-9 Orientation A MO/KB	[illegible]	Litter Lab I (C-9 Load) BAY JR/JB
		1030-1130	C-9 Hands On Training (On C-9) A MO/KB	[illegible]	[illegible]
		1130-1230	LUNCH		
		1230-1320	Litter Lab I BAY JR/JB	C-9 Orientation A MO/KB	[illegible]
		1330-1420	Litter Lab I (C-141 Load) BAY JR/JB	C-9 Orientation A MO/KB	[illegible]
		1430-1520	Litter Lab I (C-9 Load) BAY JR/JB	C-9 Orientation A MO/KB	[illegible]
		1530-1620	**MTP (Disk 9:3)** D CR	C-9 Hands On Training (On C-9) A MO/KB	Equipment Lab C SP

DATE	DOT	HOUR	CLSRM	SUBJECT	Instructor	Special Instructions
12 Nov 97	13	0730-0920	AUD	Personal Responsibilities (Disk 3:1)	EL	B 775
		0930-1130	AUD	Aircraft Safety and Security	KB	
		1130-1230	LUNCH			
		1230-1320	**OSCAR** **Lifepak 10 (Disk 3:2)** B820/D AM	**PAPA** Litter Lab I B820/BAY JR/JB	**ROMEO** C-9 Orientation B820/A MO/KB	
		1330-1420	**Pulse Ox Etc. (Disk 10:3)** C SP	Litter Lab I (C-141 Load) BAY JR/JB	C-9 Orientation A MO/KB	
		1430-1520	**Pulse Ox Etc. (Disk 10:3)** C SP	Litter Lab I (C-9 Load) BAY JR/JB	C-9 Orientation A MO/KB	
		1530-1620	Equipment Lab D EL	Equipment Lab L/C CR	C-9 Hands On Training A MO/KB	

DATE	DOT	HOUR	CLSRM	SUBJECT	Instructor	Special Instructions
13 Nov 97	14	0730-0820	AUD	Preflight Mission Planning	MO/CC	B 775
		0830-0920	AUD	C-9 Patient Position Planning	MO	
		0930-1130	AUD	Orientation to Aircraft Exercises	MO	
		1130-1230	**LUNCH**			
		1230-1320	AUD	Medication Administration	AM	
		1330-1420	A/B	Crew Compliment C-9A	MO/KB	B 820
		1430-1620	A/B/C	Aircraft Exercise Planning	MO/KB	

EQUIPMENT PROFICIENCY CHECK = EPC

DATE	DOT	HOUR	SUBJECT/CLSRM/Instructor		
14 Nov 97	15		**OSCAR** **0700 - 1100** C-9 AIRCRAFT EXERCISE A MO/SP	**PAPA** **0730-0900** EPC I B CC/JR/EL **0900-1030 Brunch**	**ROMEO** **0930-1230** EPC I C KB/JB/AM
			1100-1230 Lunch	C-9 AIRCRAFT EXERCISE **1030-1430** B JR/CR	**1230-1400 Lunch**
			1230-1530 EPC I JB/TEW/SP	**1430-1600** EPC I *[continuation]* MO	**1400-1800** C-9 AIRCRAFT EXERCISE A AM/KB

DATE	DOT	HOUR	CLSRM	SUBJECT	Instructor	Special Instructions

17 Nov 97	16	0730-0900	AUD	Test 3 and Review	CC/EL	B 775
		[illegible]	AUD	Respiratory Disorders (Disk 3.2)	AM	
		[illegible]	AUD	Airway Management/Ventilation Lecture (Disk 3.3)	AM	
		1130-1230	LUNCH			
		1230-1320	AUD	Infection Control	Capt Taylor	
		1330-1420	AUD	Blood Dyscrasias	AM	
		[illegible]	AUD	Pediatrics (Disk 4.2)		
		[illegible]	AUD	Obstetrics Lecture (Disk 4.3)		
		1530-1620	AUD	**Obstetrics (hands-on)**	SP	

DATE	DOT	HOUR	SUBJECT/CLSRM/Instructor		
18 Nov 97	17	0730-0820	**OSCAR** C-141 Orientation A / B 820 (TEW)/CC/CR	[illegible]	**ROMEO** Inflight Codes B / B820 AM
		0830-0920	C-141 Orientation C-141 (TEW)/CC/CR		Inflight Codes C-9 / C-130 AM/MO
		0930-1020	C-141 Orientation C-141 (TEW)/CC/CR		Airway Lab B MO
		1030-1130	C-141 Orientation A (TEW)/CC/CR	Equipment Lab D KB	Airway Lab B MO
		1130-1230	LUNCH		
		1230-1320	Inflight Codes B AM	C-141 Orientation A / B 820 (TEW)/CC/CR	[illegible]
		1330-1420	Inflight Codes C-9 / C-130 AM/MO	C-141 Orientation (TEW)/CC/CR	
		1430-1520	Airway Lab B MO	C-141 Orientation (TEW)/CC/CR	
		1530-1620	Airway Lab B MO	C-141 Orientation A (TEW)/CC/CR	Equipment Lab D KB

DATE	DOT	HOUR	SUBJECT/CLSRM/Instructor		
19 Nov 97	18	0730-0820	**OSCAR** **Stryker Frame (Disk 5.2)** D / B 820 KB	**PAPA** Inflight Codes B /B820 AM	**ROMEO** C-141 Orientation A/B820 (TEW)/CC/CR
		0830-0920	**Stryker Frame (Disk 5.2)** D KB	Inflight Codes C-9 / C-130 AM/MO	C-141 Orientation A (TEW)/CC/CR
		0930-1020	**Collins Traction (Disk 5.2)** D KB	Airway Lab B MO	C-141 Orientation A (TEW)/CC/CR
		1030-1130	Equipment Lab D KB	Airway Lab B MO	C-141 Orientation A / C-141 (TEW)/CC/CR
		1130-1230	LUNCH		
		[illegible]	AUD	Burns (Disk 6.2)	
		[illegible]	AUD	Shock (Disk 6.3)	
		1430-1540	AUD	Crew Compliment Orientation to Aircraft Exercises C-141	(TEW)/AM/CR	B775 / Bring Checklist
		1530-1620	AUD	Patient Position Planning C-141	(TEW)/AM	

DATE	DOT	HOUR	CLSRM	SUBJECT	Instructor	Special Instructions

20 Nov 97	19	0730-0820	AUD	Cardiac (Disk 3:1)	AM	
		0830-0920	AUD	Orthopedics (Disk 5:1)	(JR)/JB	
		0930-1020	TBA	EPC II	MO/CR/ SP/AM/JB	B 820
		1030-1130	TBA	EPC II	MO/CR/ SP/AM/JB	
		1130-1230	LUNCH			
		1230-1320	**OSCAR** **Miniox (Disk 4:2)** C / B820 (JR)/KB	PAPA ALSS (Disk 4:1) A / B820 AM	ROMEO ECAS (Disk 7:1) C-141 / B820 (EL)/SP	
		1330-1420	**ALSS (Disk 4:1)** A AM	Miniox (Disk 4:2) C (JR)/KB	C-141 Hands On C-141 (EL)/SP	
		1430-1520	**ECAS (Disk 7:1)** C-141 (EL)/SP	C-9A / Mission Planning B MO/CR *Bring Orient to Acft Exercises HO & AMCSP 164-50, V1-4*	ALSS (Disk 4:1) A AM	
		1530-1620	C-141 Hands On C-141 (EL)/SP	Equipment Lab LC/D MO/JB	Miniox (Disk 4:2) C (JR)/KB	

DATE **DOT** **HOUR** **SUBJECT/CLSRM/Instructor**

21 Nov 97	20	0730-0820	**OSCAR** Equipment Lab LC/D MO	PAPA ECAS (Disk 7:1) C-141 / B820 (EL)/SP	**ROMEO** C-9A / Mission Planning B JB/KB *Bring Orient to Acft Exercises HO* *AMCSP 164-50, V1-4*
		0830-0920	Equipment Lab LC/D MO	C-141 Hands On C-141 (EL)/SP	Equipment Lab LC/D CC/JB
		0930-1020	C-141 / Mission Plan B SP /JB *Bring Orient to Acft Exercises HO* *AMCSP 164-50, V1-4*	Equipment Lab LC/D CC	Equipment Lab LC/D AM
		1030-1130	C-141 Live Mission Plan A/B JB	C-141 Live Mission Plan A/B AM	C-141 Live Mission Plan A/B CR
		1130-1230	LUNCH		
		1230-1300	Student Advisory Time C JB/KB	C-9A AIRCRAFT EXERCISE A MO/CR	Student Advisory Time B CC/SP
		1330-1420	EPC III	AIRCRAFT EXERCISE	EPC III
		1430-1520	EPC III	AIRCRAFT EXERCISE	EPC III
		1530-1620	EPC III	AIRCRAFT EXERCISE	EPC III
22 Nov 97	Kelly AFB		C-141 LIVE TRAINING MISSION REPORT TO BUILDING_____ AT AN STAFF		Bring dog tags, gloves, flashlights, and checklists (if applicable)

1 Dec 97	25	0730-0820	**OSCAR** Equipment Lab D SP	PAPA Bear 43 (DISK 6-1) C/B820 EL	**ROMEO** Litter Lab II BAY JB/JR/***RES***
		0830-0920	Equipment Lab D SP	Bear 43 (DISK 6-1) C/B820 EL	Litter Lab II BAY JB/JR/***RES***
		0930-1020	Litter Lab II BAY JB/JR	Bear 43 (DISK 6-1) C/B820 EL	Equipment Lab LC AM/***RES***
		1030-1120	Litter Lab II BAY JB/JR/	Equipment Lab D EL/***RES***	Equipment Lab LC AM/***RES***
		1130-1230	LUNCH		
		1230-1320	A/B	Opportune Aircraft	CR / B 820
		1330-1420	A/B	Patient Position Planning C-130	JR/***RES***
		1430-1520	A/B	Training Flight Plan Time	JR/JB/ ***RESX2*** / *Bring Orientation to Aircraft Exercise HO*
		1530-1620	LC	AFPC BRIEFING [*active duty nurses only*]	(TEW)/CC

DATE	DOT	HOUR	CLSRM / SUBJECT / Instructor	
2 Dec 97	26	0730-1230	**GROUP I** C-130 Training Mission C-130 Mockup Bldg 820 AN Staff	**GROUP II** C 130 Training Mission C-130 Mockup Bldg 820 **(Showtime 0830)** AN Staff
		1230-1630	OFF	OFF

DATE	DOT	HOUR	CLSRM	SUBJECT	Instructor	Special Instructions
3 Dec 97	27	0730-0845	AUD	Test 5 and Review	CC/EL	B775
		0900-1100	TBA	EPC IV	AN Staff	B820
		1115-1205	AUD	AE Equipment Update	AEJ	B775
		1205-1305		LUNCH		
		Stand-By	A & B	ALERT FOR CTF Group I and Group II		B820 ***Don't forget your gloves, checklist, & dogtags !***
				CTF I	AN Staff	
				CTF II	AN Staff	
				MCC	AN Staff	

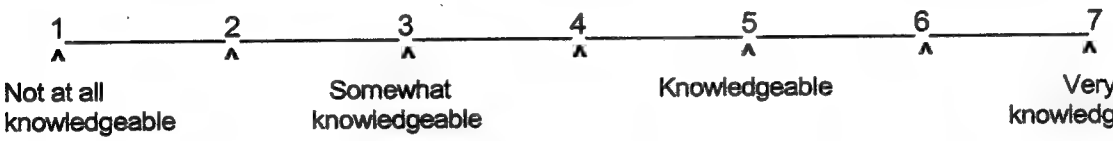
DATE	DOT	HOUR	CLSRM	SUBJECT	Instructor	Special Instructions
4 Dec 97	28	0730-1000	AUD	CRAF/Crew Integrity 50th Anniversary Outprocessing	Video/CR	*bring binder Publications, , Spl Eqmt Guide* *bring critiques to class*
		1000-1100	AUD	Graduation Practice	AN Staff	***Service Dress Uniforms***
		1100-1200	AUD	Graduation	AN Staff	

APPENDIX C

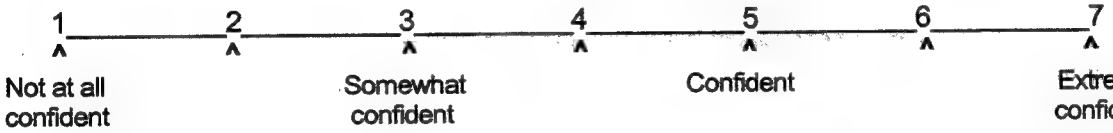
Results from the MENTOR 2010 Evaluation Pilot Study

Pretests and posttests were comprised of 10 multiple-choice items and two items, examples given below, that measured student knowledge of each lesson topic and confidence in applying that knowledge. Stryker Frame/Collins Traction were combined into a 20-item test.

How knowledgeable are you in the area of Organization & Operation of the AE System?



How confident are you in applying your knowledge of Organization & Operation of the AE System?



Organization and Operation in the AE System

	Classroom (n = 30)	MENTOR 2010 (n = 23)
Pretest	**3.9**	**3.7**
Posttest	**5.6**	**4.4**
Gain scores	**1 .7[a]**	**.7[a]**
Pre-knowledge	**1.9**	**1.9**
Post-knowledge	**3.6**	**3.3**
Difference	**1.6**	**1.4**
Pre-confidence	**1.9**	**1.9**
Post-confidence	**3.3**	**3.3**
Difference	**1.4**	**1.4**
Time	—	**52.9 minutes (range 22-60)**

Gain and Difference measures show statistically significant increases for both groups.[a] Indicates a significant difference between groups.

AE Forms[B]

	Classroom (n = 32)	MENTOR 2010 (n = 22)
Pretest	5.7	5.0
Posttest	7.8	7.2
Gain scores	2.1	2.2
Pre-knowledge	2.2	1.7
Post-knowledge	3.7	3.2
Difference	1.5	1.5
Pre-confidence	2.2	1.7
Post-confidence	3.6	3.1
Difference	1.4	1.5
Time	—	158.0 minutes (115-210)

Gain and Difference measures show statistically significant increases for both groups.
[B] No differences found between groups.

Patient Classification[B]

	Classroom (n = 29)	MENTOR 2010 (n = 25)
Pretest	4.5	4.3
Posttest	7.9	7.8
Gain scores	3.4	3.5
Pre-knowledge	2.1	1.9
Post-knowledge	4.3	4.1
Difference	2.2	2.2
Pre-confidence	2.0	1.9
Post-confidence	4.2	4.1
Difference	2.2	2.2
Time	—	89.9 minutes (range 45-168)

Gain and Difference measures show statistically significant increases for both groups.
[B] No differences found between groups.

Mental Health[B]

	Classroom (n = 32)	MENTOR 2010 (n = 20)
Pretest	—	7.4
Posttest	8.2	8.0
Gain scores	—	.5
Pre-knowledge	—	3.4
Post-knowledge	4.3	4.6
Difference	—	1.4
Pre-confidence	—	3.2
Post-confidence	4.3	4.6
Difference	—	1.4
Time	—	35.0 minutes (range 15-100)

Difference measures show statistically significant increases for the MENTOR 2010 group.
[B] No differences found between groups.

Mission Irregularities[B]

	Classroom (n = 31)	MENTOR 2010 (n = 24)
Pretest	6.6	5.6
Posttest	7.2	6.4
Gain scores	.6	.7
Pre-knowledge	2.7	2.6
Post-knowledge	4.3	4.1
Difference	1.6	1.5
Pre-confidence	2.6	2.5
Post-confidence	4.2	4.0
Difference	1.6	1.5
Time	—	43.1 minutes (range 15-65)

Only Difference measures show statistically significant increases for both groups.
[B] No differences found between groups.

Personal Responsibilities[B]

	Classroom (n = 30)	MENTOR 2010 (n = 25)
Pretest	4.6	4.2
Posttest	7.7	7.4
Gain scores	3.1	3.2
Pre-knowledge	2.0	2.0
Post-knowledge	4.0	4.0
Difference	2.0	2.0
Pre-confidence	1.9	1.9
Post-confidence	3.9	4.0
Difference	2.0	2.1
Time	—	43.1 minutes (range 15-65)

Gain and Difference measures show statistically significant increases for both groups.
[B] No differences found between groups.

MTP[B]

	Classroom (n = 28)	MENTOR 2010 (n = 25)
Pretest	5.1	4.7
Posttest	7.6	7.4
Gain scores	2.5	2.7
Pre-knowledge	1.8	1.4
Post-knowledge	4.1	3.6
Difference	2.3	2.3
Pre-confidence	1.8	1.5
Post-confidence	4.0	3.5
Difference	2.2	2.0
Time	—	43.6 minutes (range 29-65)

Gain and Difference measures show statistically significant increases for both groups.
[B] No differences found between groups.

Respiratory Disorders[B]

	Classroom (n = 29)	MENTOR 2010 (n = 25)
Pretest	7.3	6.0
Posttest	8.9	8.3
Gain scores	1.5	2.3
Pre-knowledge	3.5	3.6
Post-knowledge	4.8	4.7
Difference	1.3	1.1
Pre-confidence	3.5	3.5
Post-confidence	4.9	4.5
Difference	1.4	1.0
Time	—	47.8 minutes (range 28-90)

Gain and Difference measures show statistically significant increases for both groups.
[B] No differences found between groups.

Suction Laerdal[B]

	Classroom (n = 30)	MENTOR 2010 (n = 25)
Pretest	6.2	6.9
Posttest	8.2	7.8
Gain scores	2.0	1.9
Pre-knowledge	2.8	2.8
Post-knowledge	4.3	4.4
Difference	1.5	1.6
Pre-confidence	2.7	2.7
Post-confidence	4.4	4.2
Difference	1.7	1.5
Time	—	34.3 minutes (range 20-52)

Gain and Difference measures show statistically significant increases for both groups.
[B] No differences found between groups.

Pediatrics[B]

	Classroom (n = 30)	MENTOR 2010 (n = 25)
Pretest	6.7	5.8
Posttest	7.7	7.2
Gain scores	1.0	1.4
Pre-knowledge	3.3	3.1
Post-knowledge	4.3	4.2
Difference	1.0	1.1
Pre-confidence	3.3	2.9
Post-confidence	4.3	4.1
Difference	1.0	1.2
Time	—	33.9 minutes (range 20-59)

Gain and Difference measures show statistically significant increases for both groups.
[B] No differences found between groups.

Obstetrics[B]

	Classroom (n = 30)	MENTOR 2010 (n = 25)
Pretest	5.6	6.2
Posttest	8.0	7.9
Gain scores	2.4	1.7
Pre-knowledge	3.0	3.2
Post-knowledge	4.3	4.1
Difference	1.3	.9
Pre-confidence	3.0	3.1
Post-confidence	4.3	4.0
Difference	1.3	.9
Time	—	31.2 minutes (range 20-38)

Gain and Difference measures show statistically significant increases for both groups.
[B] No differences found between groups.

Stryker/Collins

	Classroom (n = 28)	MENTOR 2010 (n = 24)
Pretest	8.6	9.0
Posttest	15.6	14.1
Gain scores	7.0[a]	5.0[a]
Pre-knowledge	1.6	1.6
Post-knowledge	3.9	3.3
Difference	2.3	1.7
Pre-confidence	1.6	1.6
Post-confidence	4.0	3.2
Difference	2.4[a]	1.6[a]
Time	—	70.6 minutes (range 29-147)

Gain and Difference measures show statistically significant increases for both groups.
[a] Differences found between groups.

Burns

	Classroom (n = 30)	MENTOR 2010 (n = 24)
Pretest	6.4	6.5
Posttest	8.3	8.2
Gain scores	1.9	1.7
Pre-knowledge	3.2	2.9
Post-knowledge	4.3	4.6
Difference	1.1[c]	1.7[c]
Pre-confidence	3.2	3.1
Post-confidence	4.3	4.4
Difference	1.1	1.3
Time	—	51.1 minutes (range 30-72)

Gain and Difference measures show statistically significant increases for both groups.
[c] Difference between groups approaching significance $p > .07$.

Neurology[B]

	Classroom (n = 30)	MENTOR 2010 (n = 24)
Pretest	7.7	8.3
Posttest	8.2	8.0
Gain scores	.4	-0.3
Pre-knowledge	3.1	3.0
Post-knowledge	4.2	4.1
Difference	1.1	1.1
Pre-confidence	3.0	2.9
Post-confidence	4.2	4.0
Difference	1.2	1.1
Time	—	25.0 minutes (range 18-38)

Only Difference measures show statistically significant increases for both groups.
[B] No differences found between groups.

Cardiac Disorders[B]

	Classroom (n = 17)	MENTOR 2010 (n = 24)
Pretest	6.3	6.3
Posttest	7.2	7.0
Gain scores	.9	.7
Pre-knowledge	3.7	3.6
Post-knowledge	4.3	4.4
Difference	.6	.8
Pre-confidence	3.8	3.4
Post-confidence	4.4	4.4
Difference	.6	1.0
Time	—	36.5 minutes (range 27-48)

Gain and Difference measures show statistically significant increases for both groups.
[B] No Differences found between groups.

Orthopedics[B]

	Classroom (n = 27)	MENTOR 2010 (n = 24)
Pretest	4.5	5.1
Posttest	6.3	6.2
Gain scores	1.8	1.1
Pre-knowledge	3.2	3.3
Post-knowledge	4.2	4.1
Difference	1.0	.8
Pre-confidence	3.2	3.1
Post-confidence	4.3	4.4
Difference	1.1	1.3
Time	—	43.0 minutes (range 28-60)

Gain and Difference measures show statistically significant increases for both groups.
[B] No Differences found between groups.

Miniox III[B]

	Classroom (n = 29)	MENTOR 2010 (n = 25)
Pretest	3.8	4.1
Posttest	7.9	7.2
Gain scores	4.1	3.1
	(n = 28)	(n = 22)
Pre-knowledge	1.8	1.7
Post-knowledge	3.9	3.7
Difference	2.1	2.0
Pre-confidence	1.8	1.8
Post-confidence	3.8	3.6
Difference	2.0	1.8
Time	—	43.4 minutes (range 30-70)

Gain and Difference measures show statistically significant increases for both groups.
[B] No Differences found between groups.

ALSS[B]

	Classroom (n = 28)	MENTOR 2010 (n = 25)
Pretest	4.4	4.0
Posttest	7.6	7.2
Gain scores	3.3	3.2
Pre-knowledge	1.8	1.6
Post-knowledge	3.6	3.5
Difference	1.8	1.9
Pre-confidence	1.6	2.0
Post-confidence	3.6	3.3
Difference	2.0	1.3
Time	—	46.5 minutes (range 30-65)

Gain and Difference measures show statistically significant increases for both groups.
[B] No Differences found between groups.

ECAS[B]

	Classroom (n = 29)	MENTOR 2010 (n = 23)
Pretest	4.6	4.7
Posttest	7.3	7.0
Gain scores	2.7	2.3
Pre-knowledge	1.6	1.5
Post-knowledge	3.8	3.3
Difference	2.2	1.8
Pre-confidence	1.8	1.7
Post-confidence	4.0	3.4
Difference	2.2	1.7
Time	—	23.0 minutes (range 15-40)

Gain and Difference measures show statistically significant increases for both groups.
[B] No Differences found between groups.

Theater AE

	Classroom (n = 27)	MENTOR 2010 (n = 25)
Pretest	3.1	3.6
Posttest	5.7	5.3
Gain scores	2.6[c]	1.7[c]
Pre-knowledge	1.7	1.7
Post-knowledge	3.0	2.5
Difference	1.3[c]	.8[c]
Pre-confidence	1.6	2.0
Post-confidence	3.1	2.4
Difference	1.5[a]	.4[a]
Time	—	64.1 minutes (range 20-115)

Gain and Difference measures show statistically significant increases for both groups.
[a] Statistically significant difference.
[c] Difference approaching significance ($p > .08$).

Combat Casualty[B]

	Classroom (n = 27)	MENTOR 2010 (n = 25)
Pretest	4.3	3.4
Posttest	6.7	6.7
Gain scores	2.4	3.3
Pre-knowledge	1.8	1.6
Post-knowledge	3.0	2.8
Difference	1.2	1.2
Pre-confidence	1.9	1.5
Post-confidence	2.9	2.6
Difference	1.0	1.1
Time	—	48.3 minutes (range 35-75)

Gain and Difference measures show statistically significant increases for both groups.
[B] No Differences found between groups.

PT Lox[B]

	Classroom (n = 29)	MENTOR 2010 (n = 24)
Pretest	4.7	4.4
Posttest	8.2	7.8
Gain scores	3.6	3.4
Pre-knowledge	1.6	1.5
Post-knowledge	3.9	3.5
Difference	1.3	2.0
Pre-confidence	1.6	1.7
Post-confidence	3.8	3.4
Difference	2.2	1.7
Time	—	28.1 minutes (range 19-44)

Gain and Difference measures show statistically significant increases for both groups.
[B] No Differences found between groups.

Bear 33[B]

	Classroom (n = 25)	MENTOR 2010 (n = 23)
Pretest	4.5	4.4
Posttest	7.9	7.8
Gain scores	3.4	3.4
Pre-knowledge	1.5	1.5
Post-knowledge	3.2	3.2
Difference	1.7	1.7
Pre-confidence	1.5	1.7
Post-confidence	3.3	3.2
Difference	1.8	1.5
Time	—	76.4 minutes (range 25-137)

Gain and Difference measures show statistically significant increases for both groups.
[B] No Differences found between groups.

Shock[B]

	Classroom (n = 28)	MENTOR 2010 (n = 25)
Pretest	5.7	5.2
Posttest	7.9	7.8
Gain scores	2.2	2.6
Pre-knowledge	3.2	3.1
Post-knowledge	4.1	4.4
Difference	.9	1.3
Pre-confidence	3.1	3.0
Post-confidence	4.3	4.4
Difference	1.2	1.4
Time	—	41.0 minutes (range 25-60)

Gain and Difference measures show statistically significant increases for both groups.
[B] No Differences found between groups.

Combat Abdominal[B]

	Classroom (n = 28)	MENTOR 2010 (n = 25)
Pretest	5.4	5.5
Posttest	7.4	7.2
Gain scores	2.0	1.7
Pre-knowledge	2.5	2.8
Post-knowledge	3.3	3.9
Difference	.8	1.1
Pre-confidence	2.4	2.7
Post-confidence	3.4	3.8
Difference	1.0	1.1
Time	—	34.0 minutes (range 19-57)

Gain and Difference measures show statistically significant increases for both groups.
[B] No Differences found between groups.

GI/GU

	Classroom (n = 27)	MENTOR 2010 (n = 24)
Pretest	6.4	6.0
Posttest	7.4	7.2
Gain scores	1.0	1.2
Pre-knowledge	3.0	2.8
Post-knowledge	3.6	4.1
Difference	.6[c]	1.3[c]
Pre-confidence	2.9	2.8
Post-confidence	3.6	4.1
Difference	.7[a]	1.3[a]
Time	—	33.2 minutes (range 25-50)

Gain and Difference measures show statistically significant increases for both groups.

[a] **Statistically significant difference.**

[c] Difference approaching significance ($p > .08$

APPENDIX D: FN/AET Course- Transition Schedule
Class 980106

DATE	DOT	HOUR	CLSRM	SUBJECT	Instructor	Remarks
6 Jan 98	1	[redacted]	163	Inprocessing	AN Staff	Bldg 775
		0730-0750	163	Registration	SAM ED/DA	
		0800-0815	163	Dept of Aerospace Nursing [AN]*Welcome*	Course Directors	
		0815-0830	163	School of Aerospace Medicine [SAM]*Welcome*	Sqdn CC / CCF	
		0830-0850	163	Course Overview	AN Staff	
		0900-1030	163	Course Overview, SAM Briefing, and Mug Shots	AN Staff	
		1030-1130	163	Hyperbaric Medicine	AL Staff	
		1130-1230	163	Lunch		
		1230-1320	163	Registration/Introduction/Atmosphere	FP Staff	
		1330-1420	163	Respiration/Circulation	FP Staff	
		1430-1520	163	Hypoxia/Hyperventilation	FP Staff	
		1530-1620	163	Effects of Pressure Changes	FP Staff	

DATE	DOT	HOUR	SUBJECT/CLSRM	
			Group I	**Group II**
7 Jan 98	2		O2 Equipment Bldg 160 **(0730-0850)**	Triage **(0730-0820)** TEW 163
			02 Lab Objectives/PreflightBrief/Equip Issue/02 lab **(0900-0945)**	Triage Continued **(0830-0920)** TEW 163
			Type I Chamber **(0945-1115)**	NBC **(0930-1020)** Capt Moreno-Ferguson 163
			Post Flight Brief **(1115-1130)**	NBC Continued **(1030-1120)** Capt Moreno-Ferguson 163
			Lunch **(1130-1230)**	Lunch **(1130-1230)**
			Triage **(1230-1320)** TEW 163	02 Equipment Bldg 160 **(1230-1350)**
			Triage Continued **(1330-1420)** TEW 163	02 Lab Objectives/PreflightBrief/Equip Issue/02 Lab **(1400-1445)**
			NBC **(1430-1520)** Capt Moreno-Ferguson 163	Type I Chamber Flight **(1445-1615)**
			NBC Continued **(1530-1620)** Capt Moreno-Ferguson 163	Post Flight Brief **(1615-1630)**

DATE	DOT	HOUR	CLSRM	SUBJECT	Instructor	Special Instructions
8 Jan 98	3	[redacted]	163	Nursing Assessment Test	CC/EL	Bldg 775
		0830-0920	163	Spatial Disorientation	FP Staff	
		0930-1020	163	Acceleration/Thermal Stress	FP Staff	
		1030-1120	163	Fatigue, Noise, and Vibration	FP Staff	
		1120-1230	163	Lunch		
		1230-1320	163	Human Performance / Self-Imposed Stress	FP Staff	
		1330-1420	163	Human Performance / Self-Imposed Stress (Cont'd)	FP Staff	
		1430-1520	163	Situational Awareness	FP Staff	
		1530-1600	163	Vision	FP Staff	
		1600-1630	163	Aircraft Pressurization	FP Staff	

DATE	DOT	HOUR	SUBJECT/CLSRM/Instructor	
9 Jan 98	4		**Group I**	**Group II**
			Escape/Crash Survival Bldg 160 **(0730-0820)**	AE Mechanics **Bring gloves and all publications** Bldg 820/A KB/CR **(0730-0820)**
			Vision/Night Vision Demonstration **(0830-0930)**	AE Mechanics Continued B820/A KB/CR **(0830-0915)**
			Preflight Briefing **(0930-0945)**	Personal Protection **(0930-1020)** Major Carpenter 163
			Type 2 Chamber and Rapid Decompression **(0945-1130)**	Personal Protection Continued **(1030-1120)** Major Carpenter 163
			Lunch **(1130-1230)**	Lunch **(1130-1230)**
			AE Mechanics **Bring gloves and all publications** Bldg 820/A KB/CR **(1230-1320)**	Escape/Crash Survival Bldg 160 **(1230-1320)**
			AE Mechanics Continued Bldg 820/A KB/CR **(1330-1415)**	Vision/Night Vision Demonstration **(1330-1430)**
			Personal Protection **(1430-1520)** Major Carpenter AUD	Preflight Briefing **(1430-1445)**
			Personal Protection Continued **(1530-1620)**	Type 2 Chamber and Rapid Decompression **(1445-1630)**

12 January 1998, | 0700 | SERVICE DRESS UNIFORM INSPECTION | AN STAFF | Bay area B820

DATE	DOT	HOUR	CLSRM	SUBJECT	Instructor	Special Instructions
12 Jan 98	5	0730-1630	A/B	Survival (didactic)	FPS STAFF	B820
13 Jan 98	6	0730-1630	A/B	Survival (didactic)	FPS STAFF	
14 Jan 98	7	0730-1630		Survival (field)	FPS STAFF	
15 Jan 98	8	0730-1630		Survival (field)	FPS STAFF	
16 Jan 98	9	0730-1630		Survival (field)	FPS STAFF	

19 Jan 98 Martin Luther King Holiday

DATE	DOT	HOUR	CLSRM	SUBJECT	Instructor	Special Instructions
20 Jan 98	10	[redacted]	163	Organization/Operations	JR	B775
		0810-0900	163	Crew Resource Management	KB	
		0915-1130	BAY	Aircraft Walk-through / Principles of Inflight Nursing Care / Inflight Kits	SP/CR/CC	B820
		1130-1230		Lunch		
		1230-1300	163	Altitude Phys Test Review	FP Staff	Handouts
		1300-1520	163	AE Forms	JR	*AMCSP 164-50, Vol 3*
		1530-1620	163	AE Forms *practical*	JR	

DATE	DOT	HOUR	CLSRM	SUBJECT	Instructor	Special Instructions
21 Jan 98	11	[redacted]	163	Test 2 and Review	CC/EL	Bldg 775
		0830-0900	[redacted]			
		[redacted]				
		1010-1100	163	Echelons of Care	KB	
		1100-1130	[redacted]		AN Staff	
		1130-1230		Lunch		
		1230-1300		Class Photo	AN Staff	
		[redacted]				

FROM THIS TIME ON, WHEN SCHEDULED FOR BLDG 820, STUDENTS ARE REQUIRED TO BRING THESE ITEMS:
- GLOVES - DOGTAGS - CHECKLIST - PUBLICATIONS

DATE	DOT	HOUR	SUBJECT/CLSRM/Instructor		
			OSCAR	**PAPA**	**ROMEO**
			C-9 Orientation	MTP	Litter Lab I (Basic Lecture)
22 Jan 98	12	0730-0820	A /B820 MO/KB	D/B820 CR	BAY/B820 JR/(TEW)
			C-9 Orientation	Lifepak 10	Litter Lab I (C-141 Load)
		0830-0920	A/B820 MO/KB	D/B820 AM	BAY JR/(TEW)
			C-9 Orientation	Pulse Ox, etc.	Litter Lab I (C-9 Load)
		0930-1020	A/B820 MO/KB	C/B820 SP	BAY JR/(TEW)
			C-9 Hands On Training (On C-9)	Pulse Ox , etc.	MTP
		1030-1130	A/B820 MO/KB	C/B820 SP	D/B820 CR
		1130-1230	LUNCH		
			Litter Lab I (Basic Lecture)	C-9 Orientation	Lifepak 10
		1230-1320	BAY JR/(TEW)	A/B820 MO/KB	D/B820 AM
			Litter Lab I (C-141 Load)	C-9 Orientation	Pulse Ox Etc.
		1330-1420	BAY JR/(TEW)	A/B820 MO/KB	C/B820 SP
			Litter Lab I (C-9 Load)	C-9 Orientation	Pulse Ox Etc.
		1430-1520	BAY JR/(TEW)	A/B820 MO/KB	C/B820 SP
			[redacted]	C-9 Hands On Training (On C-9)	Equipment Lab
		1530-1620		A/B820 MO/KB	C/B820 AM/SP

DATE	DOT	HOUR	CLSRM	SUBJECT	Instructor	Special Instructions
23 Jan 98	13	[redacted]				
		0930-1130	163/lab	Aircraft Safety and Security	KB	
		1130-1230	LUNCH			
			[redacted]	**PAPA**	**ROMEO**	
				Litter Lab I (Basic Lecture)	C-9 Orientation	
		1230-1320		B820/BAY JR/(TEW)	B820/A MO/KB	
			Pulse Ox Etc.	Litter Lab I (C-141 Load)	C-9 Orientation	
		1330-1420	SP	BAY JR/(TEW)	A MO/KB	
			Pulse Ox Etc	Litter Lab I (C-9 Load)	C-9 Orientation	
		1430-1520	SP	BAY JR/(TEW)	A MO/KB	
			Equipment Lab	Equipment Lab	C-9 Hands On Training	
		1530-1620	D SP/AM	L/C TEW/CR	A MO/KB	

DATE	DOT	HOUR	CLSRM	SUBJECT	Instructor	Special Instructions
26 Jan 98	14	0730-0820	163	Preflight Mission Planning	CC	B 775
		0830-0920	163	C-9 Patient Position Planning	MO	
		0930-1100	163	Orientation to Aircraft Exercises	MO	
		1100-1130	163	Skit	AN Staff	
		1130-1230	Lunch			
		1230-1320	163	Medication Administration	AM	
		1330-1420	A/B	Crew Compliment C-9A	MO/(CR)	B 820
		1430-1620	A/B/C	Aircraft Exercise Planning	MO/(CR)	

EQUIPMENT PROFICIENCY CHECK = EPC

DATE	DOT	HOUR	SUBJECT/CLSRM/Instructor		
27 Jan 98	15		**OSCAR** **0700 - 1100** C-9 ACFT EXERCISE A/B820 JR/CR	**PAPA** **0730-0900** EPC I C/B820 AM/SP/TEW **0900-1030 Brunch**	**ROMEO** **0930-1230** EPC I C/B820 MO/CC/AM
			1100-1230 Lunch	C-9 AIRCRAFT EXERCISE **1030-1430** B/820 JB/EL	**1230-1400 Lunch**
			1230-1530 EPC I C/B820 JR/CR/CC	**1430-1600** EPC I *[continuation]* C/B820 AM	**1400-1800** C-9 ACFT EXERCISE A /B820 MO/KB

DATE	DOT	HOUR	CLSRM	SUBJECT	Instructor	Special Instructions
28 Jan 98	16	0730-0900	163	Test 3 and Review	CC/EL	B 775
		[redacted]				
		1130-1230	LUNCH			
		1230-1320	163	Infection Control	CC	
		1330-1420	163	Blood Dyscrasias	AM	
		[redacted]				

DATE	DOT	HOUR	SUBJECT/CLSRM/Instructor					
			OSCAR		[redacted]		**ROMEO**	
29 Jan 98	17	0730-0820	C-141 Orientation A/B 820	TEW/CR			Inflight Codes B/B820	AM
		0830-0920	C-141 Orientation C-141	TEW/CR			Inflight Codes C-9/C-130	AM/MO
		0930-1020	C-141 Orientation C-141	TEW/CR			Airway Lab B	MO
		1030-1130	C-141 Orientation A	TEW/CR	Equipment Lab D	KB	Airway Lab B	MO
		1130-1230	LUNCH					
		1230-1320	Inflight Codes B/B820	AM	C-141 Orientation A/B 820	TEW/CR	Stryker Frame D/B 820	KB
		1330-1420	Inflight Codes C-9/C-130	AM/MO	C-141 Orientation TEW/CR		Stryker Frame D	KB
		1430-1520	Airway Lab B	MO	C-141 Orientation TEW/CR		Collins Traction D	KB
		1530-1620	Airway Lab B	MO	C-141 Orientation A	TEW/CR	Equipment Lab D	KB

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****USAFSAM COMMANDERS CALL 0730-0830 (*Staff ONLY*)**

DATE	DOT	HOUR	SUBJECT/CLSRM/Instructor					
			OSCAR		**PAPA**		**ROMEO**	
30 Jan 98	18	[redacted]	Stryker Frame D/B820	KB	Inflight Codes B/B820	AM	C-141 Orientation A/B820	TEW/CR
		0930-1020	Stryker Frame D	KB	Inflight Codes C-9/C-130	AM/MO	C-141 Orientation A	TEW/CR
		1030-1120	Collins Traction D	KB	Airway Lab B	MO	C-141 Orientation A	TEW/CR
		1130-1230	Equipment Lab D	KB	Airway Lab B	MO	C-141 Orientation A/C-141	TEW/CR
		1230-1330	LUNCH					
		[redacted]						
		1530-1600	163/Lab	Crew Compliment Orientation to Aircraft Exercises	C-141	TEW/CR	Bring Checklist	
		1600-1640	163/Lab	Patient Position Planning	C-141	TEW		

DATE	DOT	HOUR	CLSRM	SUBJECT	Instructor	Special Instructions
2 Feb 98			[redacted]			
		0930-1020	D/C/LC/B820	EPC II	AM/JB/CR/SP/RES	B 820
		1030-1130	D/C/LC/B820	EPC II	TEW/JR/KB/MO/RES	
		1130-1230	LUNCH			
		1230-1320	**OSCAR** Miniox C/B820 JR	**PAPA** ALSS A/B820 (RES)	**ROMEO** ECAS C-141/B820 (RES)	
		1330-1420	ALSS A/B820 (RES)	MiniOx C/B820 JR	C-141 Hands On C-141 (RES)	
		1430-1520	ECAS C-141 (RES)	C-9A/C-141 Mission Planning B/B820 JB/KB *Bring Orient to Acft Exercises HO & AMCSP 164-50, V1-4*	[redacted]	
		1530-1620	C-141 Hands On C-141 (RES)	C-9A / C-141 Mission Plan B JB/KB		

DATE	DOT	HOUR	SUBJECT/CLSRM/Instructor		
3 Feb 98	20	0730-0820	**OSCAR** Equipment Lab D/B820 (RES)/JR	[redacted]	**ROMEO** C-9A / C-141 Mission Plan B/B820 TEW/CR *Bring Orient to Acft Exercises HO & AMCSP 164-50, V1-4*
		0830-0920	Equipment Lab D/B820 (RES)/JR	C-141 Hands On C-141 (RES)	C-9A / C-141 Mission Plan B/B820 TEW/CR
		0930-1020	C-9A / C-141 Mission Plan B/B820 MO/SP/RES *Bring Orient to Acft Exercises HO & AMCSP 164-50, V1-4*	Equipment Lab LC/B820 (RES)/JB	Equipment Lab D/B820 AM
		1030-1130	C-9A / C-141 Mission Plan B/B820 MO/SP/RES	Equipment Lab LC/B820 (RES)/JB	Equipment Lab D/B820 AM
		1130-1230	LUNCH		
		1230-1300	Student Advisory Time C/B820 JR/JB/CR	C-9A AIRCRAFT EXERCISE A/B820 MO/SP/(RES)	C-141 AIRCRAFT EXERCISE B/820 AM/KB/(RES)
		1330-1420	EPC III	AIRCRAFT EXERCISE	AIRCRAFT EXERCISE
		1430-1520	EPC III	AIRCRAFT EXERCISE	AIRCRAFT EXERCISE
		1530-1620	EPC III	AIRCRAFT EXERCISE	AIRCRAFT EXERCISE

DATE	DOT	HOUR	SUBJECT/CLSRM/Instructor		
			OSCAR	**PAPA**	**ROMEO**
4 Feb 98	21	0730-0820	C-141 AIRCRAFT EXERCISE B/B820 (RES)/SP	Student Advisory Time C/B820 AM/MO/JR	C-9A AIRCRAFT EXERCISE A/B820 (RES)/KB
		0830-0920	AIRCRAFT EXERCISE	EPC III	AIRCRAFT EXERCISE
		0930-1020	AIRCRAFT EXERCISE	EPC III	AIRCRAFT EXERCISE
		1030-1130	AIRCRAFT EXERCISE	EPC III	AIRCRAFT EXERCISE
		1130-1230	LUNCH		
		1230-1320	C-9A AIRCRAFT EXERCISE A/B820 (RES)/EL	C-141 AIRCRAFT EXERCISE B/820 (RES)/CR	Student Advisory Time C/B820 MO/SP/CC
		1330-1420	AIRCRAFT EXERCISE	AIRCRAFT EXERCISE	EPC III
		1430-1520	AIRCRAFT EXERCISE	AIRCRAFT EXERCISE	EPC III
		1530-1620	AIRCRAFT EXERCISE	AIRCRAFT EXERCISE	EPC III

DATE	DOT	HOUR	CLSRM	SUBJECT	Instructor	Special Instructions
5 Feb 98	22	[redacted]	163/Lab	Test 4 and Review	CC/EL	B 775
		1120-1230	LUNCH			
			OSCAR	**PAPA**		
		1230-1320	C-130 Orientation A/820 JR/AM	PTLOX, Inflight Kits D/820 CR		
		1330-1420	C-130 Orientation A/B820 JR/AM	Equipment Lab D/B820 CR		
		1430-1520	C-130 Hands on Training C-130 TEW/JB	C-130 Orientation A/B820 JR/AM		
		1530-1620	C-130 Crew Compliment B/B820 TEW/JB	C-130 Orientation A/B820 JR/AM	PTLOX, Inflight Kits CR	

DATE	DOT	HOUR	CLSRM//SUBJECT/Instructor/Special Instructions					
			OSCAR		**PAPA**		**ROMEO**	
6 Feb 98	23	0730-0820	Bear 33 C/B820	EL	Litter Lab II Bay/C-130	JB/CR	C-130 Orientation A/B820	JR/AM
		0830-0920	Bear 33 C/B820	EL	Litter Lab II Bay/C-130	JB/CR	C-130 Orientation A/820	JR/AM
		0930-1020	Bear 33 C/B820	EL	C-130 Crew Compliment A/B820	TEW/SP	C-130 Hands On Training C-130	JR/JB
		1030-1120	[redacted]		C-130 Hands On Training C-130	TEW/SP	C-130 Crew Compliment A/820	JR/JB
		1130-1230		LUNCH				
		[redacted]						
		1330-1420	163	Wound Ballistics		JB		
		1430-1520	A/B	Patient Position Planning		JR	B 820	
		1530-1620	A/B	Training Flight Plan Time		JR		

7 Feb 98	24*	Kelly AFB	C-130/C-141 LIVE TRAINING MISSION REPORT TO BUILDING AT	AN STAFF	*Bring Dog Tags, Gloves Flashlights and Checklists (if applicable)*

9 February 1998 - OFF

DATE	DOT	HOUR	CLSRM / SUBJECT / Instructor					
			OSCAR		**PAPA**		**ROMEO**	
10 Feb 98	25	0730-0820	Equipment Lab D/B820	(RES)/CR	Bear 33 C/B820	EL	Litter Lab II B820./BAY	JR/JB
		0830-0920	Equipment Lab D/B820	(RES)/CR	Bear 33 C/B820	EL	Litter Lab II B820/BAY	JR/JB
		0930-1020	Litter Lab II B820/BAY	JR/JB	Bear 33 C/B820	EL	Equipment Lab LC/B820	(RES)/SP
		1030-1120	Litter Lab II B820/BAY	JR/JB	Equipment Lab D/820	EL	Equipment Lab LC/B820	(RES)/SP
		1130-1230	LUNCH					
		1230-1320	163/Lab	Opportune aircraft			CR	B 775
		[redacted]						
		1530-1620	Conf Rm	AFPC BRIEFING [*active duty nurses only*]/Advisory			CC	

DATE	DOT	HOUR	LSRM	SUBJECT	Instructor	Special Instructions
11 Feb 98	26	0730-0830	163	Test 5	CC/EL	B775
		0845-1045	A/B/C/D/LC	EPC IV/Book Turn in	JB/JR/KB/RES/RES	B820
		1100-1115	163	Test Review	CC/EL	B775
		1115-1200	163	AE Equipment Update	AE J	
		1200-1230	163	CBT Debrief	MO	
		1230-1330		LUNCH		
		Stand-By	A & B	ALERT FOR CTF Group I and Group II		B820 ***Don't forget your gloves, & dogtags !***
				CTF I	AN Staff	
				CTF II	AN Staff	

DATE	DOT	HOUR	CLSRM	SUBJECT	Instructor	Special Instructions
12 Feb 98	27	0730-1000	163	Crew Integrity / CRAF 50th Anniversary Outprocessing	CR/Video	*bring binder Publications, , Spl Eqmt Guide* *bring critiques to class*
		1000-1100	163	Graduation Practice	AN Staff	***Service Dress Uniforms***
		1100-1200	163	Graduation	AN Staff	

Good Luck and Have a Safe Trip Home

INSTRUCTOR NAMES	INITIALS	PREVIOUS FLYING EXPERIENCE
Col ANDREWS		57th AES, SCOTT AFB, IL
Maj COLES	CC	86 AES, RAMSTEIN AB GE
Maj WILLIAMS	TEW	9th AES, YOKOTA AB, JA
Capt REINEKE	JR	1st AES, POPE AFB, NC
Capt BRYANT	JB	1st AES, POPE AFB, NC
Capt McQUADE	AM	2nd AES, RHEIN-MAIN, GE
Capt O'LOUGHLIN	MO	374 AES, YOKOTA AB, JA
SMSgt PRICE	SP	2nd AES, RAMSTEIN AB, GERMANY
MSgt LOZARES	EL	9th AES, CLARK AB, RP/YOKOTA AB, JA; 2nd AES, RAMSTEIN AB, GE
SSgt BRYAN	KB	57th AES, SCOTT AFB, IL
SSgt RODRIGUEZ	CR	2nd AES, RAMSTEIN AB, GE
SrA PALMER	CP	86 AES, RAMSTEIN AB, GE

ADJUNCT FACULTY NAMES	INITIALS	PREVIOUS FLYING EXPERIENCE
TSgt Jones	AEJ	9th AES, Clark AB, RP
LtCol Milovich	***RES1***	714th AES, McGuire AFB, NJ
Maj Bartko	***RES2***	714th AES, McGuire AFB, NJ

APPENDIX E

Student Biographical Data Survey

Only the last four digits of SS# _____

Please complete the items below:

1. I am (circle one): **Air Force** **Army** **Navy** **Other**

2. I am (circle one): **Active Duty** **Reserves** **Guard**

3. What is your GRADE/RANK?

4. What is your Air Force Specialty (MOS)?

   a. Give a brief description of your duties:

5. How many years of experience do you have in your current Air Force Specialty (MOS)?

6. If you have a secondary Air Force Specialty (MOS) what is it?

   a. Give a brief description of your duties:

7. Do you work in the medical field, including part-time job, civilian occupation, moonlighting? **Yes** **No**

a. Give a brief description of your duties:

8. Do you have a follow-on flying assignment or are you currently assigned to a flying unit? **Yes** **No**

9. I am: **Female** **Male**

10. Have you heard of the computer-based training modules (MENTOR 2010) to replace a portion of the FN/AET course?
    Yes **No**

11. Have you had an opportunity to go through any of the MENTOR 2010 computer-based training modules?

    Yes **No**

12. Circle the number on the scale that best represents your computer skills level.

1——————2——————3——————4
None Fair Good Expert

13. If given the choice I would be in the group that received the FN/AET course as (circle one):

Classroom instruction **Computer-based training**

APPENDIX F

Traditional and Mentor Test Booklets

Form A Class

Last Four Digits SSN:_____

ALSS

You will be using a SCANTRON form to mark your answers.

IMPORTANT DIRECTIONS for marking your answers:

1. Write **CAALSS** in the NAME BOX on the scantron sheet. Fill in the circles to match.
2. Write the last four digits of your social security number in the first four columns of the SSAN box. Fill in the circles to match.
3. Turn the page and complete the ALSS pretest.

Form A **ALSS**

1. To recharge the battery to 90%, the ALSS must be plugged into the 100 volt AC for _____hours.

   a. 5
   b. 7
   c. 3
   d. 10

2. The oxygen tanks must have a minimum of _____ psi prior to take off.

   a. 200
   b. 500
   c. 1000
   d. 1500

3. If there is less than 1cc of water in the humidity reservoir, how much water should you add?

   a. 30cc
   b. 40cc
   c. 50cc
   d. 60cc

4. If the sensors detect a below normal temperature, what warning will be displayed on the LCD?

   a. "System Fail"
   b. "Sensor Failure"
   c. "TEMP"
   d. Either a or b

5. When the alarm test button is activated, all of the following will occur EXCEPT:

   a. LED display of "888"
   b. Heater will begin to warm
   c. Audible alarm sounds
   d. All lights illuminate

6. The ALSS unit should be connected to an AC power Source within _____ hours after the PWR FAIL light illuminates or the battery will be permanently damaged.

   a. 2
   b. 3
   c. 4
   d. 5

7. If, while checking the humidity of the humidity sponge you are able to withdraw 5.5 cc of water, you should add ____ cc of water through the fill port.

   a. 0
   b. 10
   c. 30
   d. 60

8. Which of the following is true regarding the placement and securing of the ALSS?

   a. Place with control panels facing the aisle.
   b. A minimum of two straps are required to secure the ALSS.
   c. The ALSS requires only 1 litter space.
   d. All of the above are true.

9. Which of the following is true regarding the activation of the "System Fail" alarm?

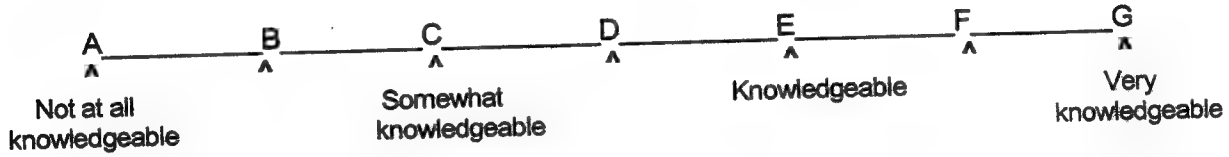
   a. Activated when the secondary temperature sensor exceeds 39.2
   b. Usually indicates a problem with the temperature sensors or control circuitry.
   c. The incubator should be inspected by medical maintenance before additional patient use.
   d. All of the above are true.

10. When the Air Flow Alarm is activated, you must check the infant and do which of the following?

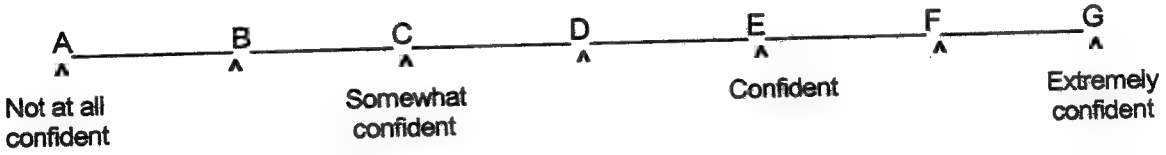
   a. Turn down the temperature by two degrees
   b. Make sure the oxygen connection tubing is not obstructed
   c. Look for blockage around the mattress tray and clear the obstruction
   d. None of the above.

Fill in the letter on the scantron that best represents your response.

11. How knowledgeable are you in the area of ALSS?



12. How confident are you in applying your knowledge of ALSS?



STOP

Wait for instructions to complete the ALSS posttest.

13. What is the battery capacity when the incubator is set to 37 and the ambient air is 20?

a. 3 hours
b. 5 hours
c. 7 hours
d. 12 hours

14. At what psi are the O2 tanks considered empty and need to be changed?

a. 300 psi
b. 400 psi
c. 200 psi
d. 100 psi

15. When the humidity sponge is filled with 150cc of sterile water, for approximately how long will 45% humidity be maintained?

a. 2 hours
b. 4 hours
c. 6 hours
d. 8 hours

16. The temperature sensors detect temperatures within normal operating ranges of _____Fahrenheit or greater.

a. 50
b. 60
c. 70
d. 80

17. If, after pushing the Alarm test button the LED does not completely illuminate (888) and an alarm sound you should:

a. Continue to use the ALSS as prescribed.
b. Change the battery.
c. Power the machine off and then on again.
d. Obtain another ALSS.

18. The ALSS stored in a C-9A aircraft will need to be recharged at a minimum of _____ hours each month.

a. 10
b. 24
c. 50
d. 100

19. After the initial saturation of the humidity sponge, what is the amount of water that must be injected through the fill port to ensure 45% humidification for 8 hours?

a. 110 cc
b. 130 cc
c. 150 cc
d. 170 cc

20. In addition to the oxygen regulator and wrench, the accessory bag should contain all of the following EXCEPT:

a. 50 cc Luer Lock syringe
b. Bulb syringe
c. Two humidity sponges
d. Extra mattress covers

21. The high temperature alarm activates when the _____temperature sensor exceeds _____

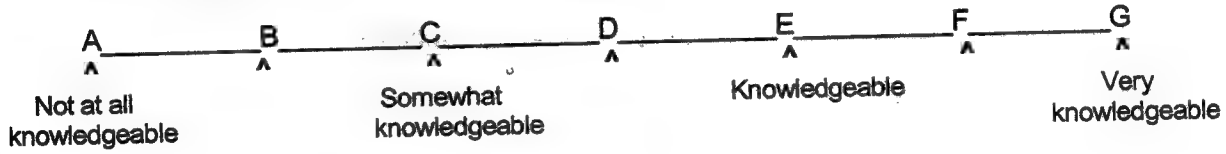
a. Primary/36.5 C
b. Secondary/38.5 C
c. Primary/38.5
d. Secondary/36.5

22. The activation of ANY incubator alarm requires:

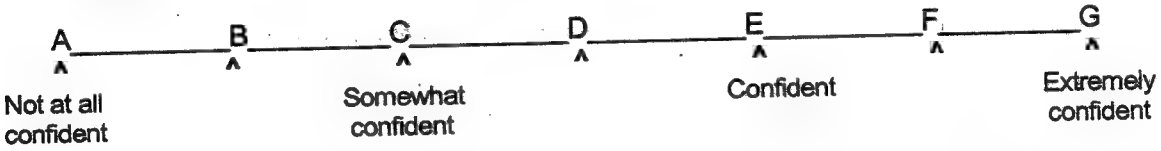
a. A complete assessment of the patient.
b. Inspection of the incubator by medical maintenance before additional patient use
c. Shut down of the heater.
d. All of the above.

Fill in the letter on the scantron that best represents your response.

23. How knowledgeable are you in the area of ALSS?



24. How confident are you in applying your knowledge of ALSS?



25. I would prefer to have this lesson delivered as:

(A) **Computer-based training** (B) **Instructor's lecture** (C) **Either way**

Training Assessment

Fill in the letter on the scantron that best represents your response. Note the scale end-points!

26. The lesson objective was _____ presented.

Clearly A——B——C——D——E——F——G **Not clearly**

27. The instructional sequence was _____ in keeping my attention.

Inadequate A——B——C——D——E——F——G **Adequate**

28. Lesson content was _____ to understand than I would have liked it to be.

More Difficult A——B——C——D——E——F——G **Easier**

29. Repetition of lesson content was…

Stimulating A——B——C——D——E——F——G **Boring**

30. Terms, concepts, and information that were important to know were emphasized…

Effectively A——B——C——D——E——F——G **Ineffectively**

31. Question-and-answer sessions were _____ for learning.

Inadequate A——B——C——D——E——F——G **Adequate**

32. The amount of interaction (with students, instructor, computer) was _____ for learning.

Insufficient A——B——C——D——E——F——G **Sufficient**

33. The pace of the lesson was _____ for learning.

Inappropriate A——B——C——D——E——F——G **Appropriate**

34. Overall the lesson was...

Motivating A——B——C——D——E——F——G **Unmotivating**

35. This lesson was_____ to my training.

Irrelevant A——B——C——D——E——F——G **Relevant**

Last Four Digits SSN:_____

BURNS

You will be using a SCANTRON form to mark your answers.

IMPORTANT DIRECTIONS for marking your answers:

1. Write **MBBUNE** in the NAME BOX on the scantron sheet. Fill in the circles to match.
2. Write the last four digits of your social security number in the first four columns of the SSAN box. Fill in the circles to match.
3. Turn the page and complete the Burns pretest.

Form B **BURNS** Last four digits of your SS#_____

1. Your preflight assessment of a severely burned patient should include all of the following EXCEPT?

   a. Make sure dressings are dry and secure
   b. Make sure patient's medications are enough to last for the flight
   c. Make sure an escharotomy has been performed prior to flight
   d. Make sure urinary drainage catheter is secure

2. Which of the following is an indication for giving oxygen to a burn patient?

   a. respiratory rate change and restlessness
   b. mental status change
   c. cyanosis
   d. all of the above

3. The fluid resuscitation formula for a child burn patient is:

   a. 2-4cc/Kg/%TBS within first 24 hours
   b. 3-4cc/KG/%TBS within first 24 hours
   c. 2-4cc/Kg/%TBS within first 12 hours
   d. 3-4cc/KG/%TBS within first 12 hours

4. In addition to the formula, all of the following factors are important in determining fluid resuscitation EXCEPT?

   a. Urinary output
   b. Medical history
   c. Vital signs
   d. Ethnic background

5. Tommy Jensen, a 3 year-old child, needs a 1470cc fluid resuscitation over the first 24 hours. He should be given half that amount in the first ___ hours.

   a. 4
   b. 6
   c. 8
   d. 12

6. The normal range of urinary output for an adult receiving fluid resuscitation is:

   a. 30-70cc/hour
   b. 75-100cc/hour
   c. 90-120cc/hour
   d. none of the above

7. Shock causes burn patients:

   a. an initial decreased heart rate
   b. a permanent increase in heart rate
   c. an initial increased heart rate
   d. none of the above

8. A decrease in a burn patient's level of consciousness may be due to:

   a. inadequate cerebral blood flow
   b. hypoxia
   c. sepsis
   d. all of the above

9. Your burn patient is shivering. Which of the following is NOT an appropriate nursing action for this condition?

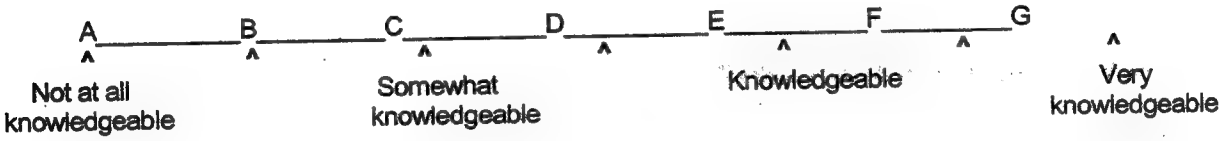
   a. Shield patient from air flows
   b. Cover patient with special blankets
   c. Ask the Aircraft Commander to raise cabin temperature
   d. Apply topicals 1/16 to 1/8 thick

10. Tissues generally have to be without oxygen for approximately ___ hours before tissue damage occurs.

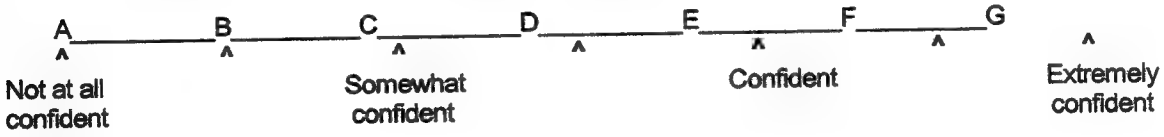
   a. 1
   b. 3
   c. 6
   d. 12

Fill in the letter on the scantron that best represents your response.

11. How knowledgeable are you in the area of Burns?



12. How confident are you in your knowledge of Burns?



Burns

Insert the **Nursing Boot Disk** into the **3 ¼" floppy disk drive.**

Press the **Reset Button** on the computer.

Once the system has rebooted, the monitor shows the **FNT** icon, remove the CD-ROM labeled **Disk 6** from the **Flight Nurse Training** binder.

Insert Flight Nurse Training **Disk 6** into CD-ROM drive.

Double click on **FNT** icon to start Flight Nurse Training.

In the Module 2 Menu click on Burns.

Enter the Time you **begin** the Burns lesson.

Complete the Burns lesson.

Enter the Time you **finished** the Burns lesson.

Once you have completed the **Burns** lesson turn the page and complete the **Burns** posttest and complete the **Neurology** pretest.

13. A preflight assessment of a severely burned patient should include the following:

a. Check NG tube patency
b. Check IVs
c. Check airway patency
d. All of the above

14. All of the following are indications for giving oxygen to a burn patient EXCEPT:

a. Dressing is loose and damp
b. Patient shows signs of respiratory distress
c. Pulse change
d. Mental status change

15. The fluid resuscitation formula for an adult burn patient is:

a. 2-4cc/Kg/%TBS within first 24 hours
b. 3-4cc/KG/%TBS within first 24 hours
c. 2-4cc/Kg/%TBS within first 12 hours
d. 3-4cc/KG/%TBS within first 12 hours

16. In addition to the formula, which of the following factors are important in determining fluid resuscitation?

a. Gender
b. Height
c. Weight
d. A and C

17. Capt. Eckerd needs a 8400cc fluid resuscitation over the first 24 hours. How much of this should be given in the first 8 hours?

a. 2100cc
b. 2800cc
c. 4200cc
d. 6300cc

18. The normal range of urinary output for a child over 30Kg receiving fluid resuscitation is:

a. 1cc/Kg/hour
b. 10-20cc/Kg/hour
c. 30-50cc/hour
d. 75-100cc/hour

19. Burn patients initially have:

a. an increased heart rate
b. a decreased heart rate
c. no change in heart rate
d. a very slow heart rate

20. A decrease in a burn patient's level of consciousness may be due to:

a. adequate cerebral blood flow
b. hypoxia
c. fluid resuscitation
d. A and B

21. Your burn patient complains that she is cold. What should you do?

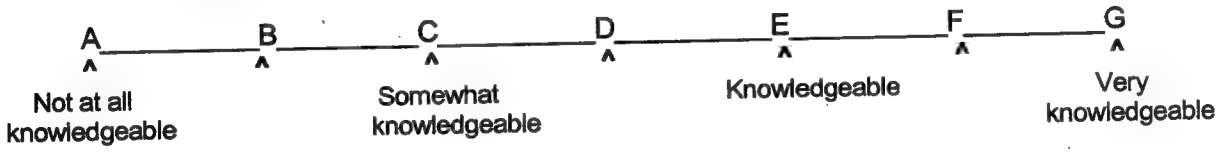
a. Change her dressing
b. Perform an escharotomy
c. Ask the Aircraft Commander to raise cabin temperature
d. All of the above

22. If a patient can get to a burn unit with __ hour(s) from the time of injury, an escharotomy may not be necessary preflight.

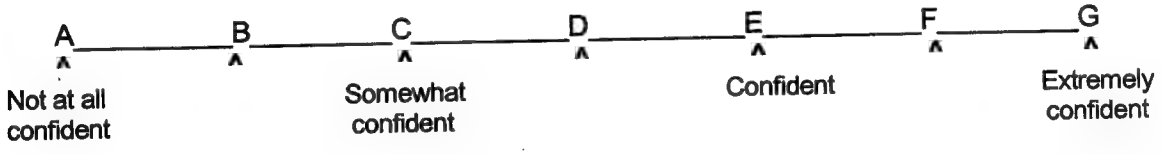
a. 4
b. 6
c. 8
d. 10

Fill in the letter on the scantron that best represents your response.

23. How knowledgeable are you in the area of Burns?



24. How confident are you in applying your knowledge of Burns?



25. I would prefer to have this lesson delivered as (circle one):

(A) **Computer-based training** (B) **Instructor's lecture** (C) **Either way**

Training Assessment

Fill in the letter on the scantron that best represents your response. Note the scale end-points!

26. Estimate the frequency at which you clicked on the "Wings" button?
Never A——B——C——D——E——F——G **Always**

27. Estimate the frequency at which you clicked on the "Sam" button?
Never A——B——C——D——E——F——G **Always**

28. It was _____ to use the buttons to navigate through the MENTOR 2010 courseware.
Easy A——B——C——D——E——F——G **Difficult**

29. The lesson objective was _____ presented.
Clearly A——B——C——D——E——F——G **Not clearly**

30. The instructional sequence was _____ in keeping my attention.
Inadequate A——B——C——D——E——F——G **Adequate**

31. Lesson content was _____ to understand than I would have liked it to be.
More Difficult A——B——C——D——E——F——G **Easier**

32. Repetition of lesson content was…
Stimulating A——B——C——D——E——F——G **Boring**

33. Terms, concepts, and information that were important to know were emphasized…
Effectively A——B——C——D——E——F——G **Ineffectively**

34. Question-and-answer sessions were _____ for learning.
Inadequate A——B——C——D——E——F——G **Adequate**

35. The amount of interaction (with students, instructor, computer) was _____ for learning.
Insufficient A——B——C——D——E——F——G **Sufficient**

36. The pace of the lesson was _____ for learning.
Inappropriate A——B——C——D——E——F——G **Appropriate**

37. Overall the lesson was...
Motivating A——B——C——D——E——F——G **Unmotivating**

38. This lesson was _____ to my training.
Irrelevant A——B——C——D——E——F——G **Relevant**

39. All of the following are typical components of a neurological assessment EXCEPT:

a. pupil assessment
b. Glasgow Coma Scale
c. motor function and sensory evaluation
d. perform head tilt, chin lift maneuver

40. Typical inflight nursing considerations for a patient with a spinal cord injury include:

a. place patient in a cool area
b. elevate head with back rest
c. maintain airway
d. B and C

41. Increased intracranial pressure is commonly seen in patients with:

a. epilepsy
b. penetrating head injuries
c. in withdrawal from drugs
d. A and B only

42. While your patient is having a seizure, you should:

a. Restrain her
b. Remain with her
c. Loosen clothing; pad and protect
d. B and C

43. Aircraft are subject to altitude restrictions when carrying patients who:

a. Are prone to having seizures
b. Have spinal cord injuries
c. Have suspected trapped air in cranium
d. All of the above

44. Which of the following is/are signs of increasing intracranial pressure?

a. changes in pupils
b. changes in respirations
c. changes in motor response
d. all of the above

45. Typical nursing actions to prevent increasing intracranial pressure include:

a. Maintain airway and ventilation
b. Give plenty of fluids
c. Perform Valsalva maneuver
d. A and C

46. A patient with a convulsive disorder should be seated:

a. By a window
b. By an emergency exit
c. In a well-lit area
d. Near a suction and oxygen source

47. Typical nursing measures for a patient in a coma include:

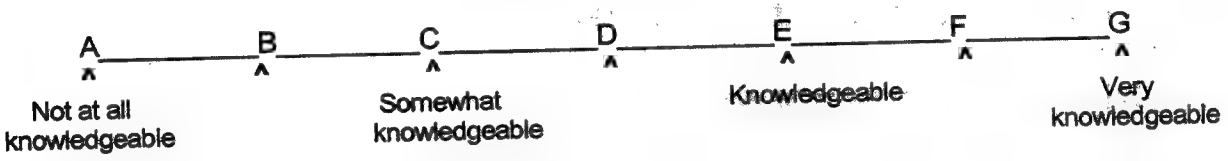
a. Use toothpaste with glycerin
b. Passive ROM every 4 hours
c. Avoid moving the patient
d. Avoid stimulating the patient

48. A patient in the acute stage of a spinal cord injury:

a. Experiences loss of temperature control
b. Coughs frequently
c. Is prone to autonomic dysflexia
d. Is prone to pneumonia

Fill in the letter on the scantron that best represents your response.

49. How knowledgeable are you in the area of Neurology?



50. How confident are you in applying your knowledge of Neurology?

Neurology

Eject and remove the CD-ROM Disk labeled **Disk 6** (Burns) from the computer.

Return **Disk 6** (Burns) to the **Flight Nurse Training** binder.

Remove the CD-ROM labeled **Disk 7** (Neurological Disorders) from the **Flight Nurse Training** binder.

Insert Flight Nurse Training **Disk 7** (Neurological Disorders) into the CD-ROM drive.

Double click on **FNT** icon to start Flight Nurse Training.

In the Module 3 Menu click on Neurological Disorders.

Enter the Time you **begin** the Neurology lesson.

Complete the Neurology lesson.

Enter the Time you **finished** the Neurology lesson.

Once you have completed the Neurology lesson, turn the page and complete the Neurology posttest.

51. The most important indicator of brain function is:

a. rate and depth of respirations
b. vital signs
c. level of consciousness
d. foot and leg strength

52. All of the following are typical nursing measures for a patient with a spinal cord injury in the acute stage EXCEPT:

a. give plenty of fluids
b. make sure Collins traction properly applied
c. maintain adequate tissue perfusion
d. check skin integrity

53. Increased intracranial pressure is commonly seen in patients with:

a. cerebral edema, space occupying lesions, and head trauma
b. spinal cord injuries
c. convulsive disorders
d. none of the above

54. DURING a seizure, appropriate nursing measures would include:

a. Place a bite block
b. Take vital signs
c. Loosen clothing; pad and protect
d. B and C

55. When carrying patients with suspected trapped air in cranium, aircraft are restricted to altitudes of ___ feet or lower.

a. 2000 feet
b. 4000 feet
c. 6000 feet
d. 8000 feet

56. Which of the following is a sign of increasing intracranial pressure?

a. hunger
b. loss of consciousness
c. anger and denial
d. all of the above

57. Nursing actions to prevent increasing intracranial pressure include:

a. Promote hip and neck flexion
b. Ask aircraft commander to increase cabin altitude
c. Tilt patient's head downward
d. Maintain airway and ventilation

58. A patient with a convulsive disorder should be positioned:

a. In an aisle seat
b. Near a suction and oxygen source
c. Near a source of bright light
d. A and B only

59. Typical nursing measures for a comatose patient include:

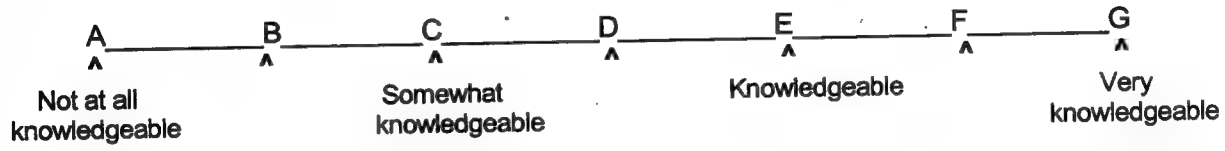
a. Maintain silence in patient's presence
b. Don't move the patient
c. Moisten eyes every 4 hours
d. A and C only

60. A patient in the intermediate stage of a spinal cord injury:

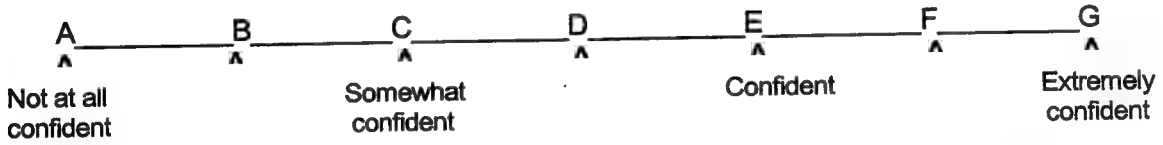
a. Should be fluid restricted to reduce intracranial pressure.
b. Should be aligned in an appropriate anatomical position
c. May have a distended bladder
d. A and B only.

Fill in the letter on the scantron that best represents your response.

61. How knowledgeable are you in the area of Neurology?



62. How confident are you in applying your knowledge of Neurology?



63. I would prefer to have this lesson delivered as (circle one):

(A) **Computer-based training** (B) **Instructor's lecture** (C) **Either way**

Training Assessment

Fill in the letter on the scantron that best represents your response. Note the scale end-points!

64. Estimate the frequency at which you clicked on the "Wings" button?

Never A——B——C——D——E——F——G **Always**

65. Estimate the frequency at which you clicked on the "Sam" button?

Never A——B——C——D——E——F——G **Always**

66. It was _____ to use the buttons to navigate through the lesson.

Easy A——B——C——D——E——F——G **Difficult**

67. The lesson objective was _____ presented.

Clearly A——B——C——D——E——F——G **Not clearly**

68. The instructional sequence was _____ in keeping my attention.

Inadequate A——B——C——D——E——F——G **Adequate**

69. Lesson content was _____ to understand than I would have liked it to be.

More Difficult A——B——C——D——E——F——G **Easier**

70. Repetition of lesson content was…

Stimulating A——B——C——D——E——F——G **Boring**

71. Terms, concepts, and information that were important to know were emphasized…

Effectively A——B——C——D——E——F——G **Ineffectively**

72. Question-and-answer sessions were _____ for learning.

Inadequate A——B——C——D——E——F——G **Adequate**

73. The amount of interaction (with students, instructor, computer) was _____ for learning.

Insufficient A——B——C——D——E——F——G **Sufficient**

74. The pace of the lesson was _____ for learning.

Inappropriate A——B——C——D——E——F——G **Appropriate**

75. Overall the lesson was...

Motivating A——B——C——D——E——F——G **Unmotivating**

76. This lesson was _____ to my training.

Irrelevant A——B——C——D——E——F——G **Relevant**

Neurology

Eject and remove the 3¼" floppy disk labeled **Nursing Boot Disk** from the computer.

Return the **Nursing Boot Disk** to the **Flight Nurse Training** binder.

Eject and remove the CD-ROM Disk labeled **Disk 7** from the computer.

Return **Disk 7** to the **Flight Nurse Training** binder.

Last four digits of SS# _____

Burns Start Time:_____

Burns Stop Time:_____

Neurology Start Time:_____

Neurology Stop Time:_____

Appendix G: Scantron Sheet

NAME ________ COURSE ________ TEST FORM ________ BOOKLET NUMBER ________

GENERAL PURPOSE ANSWER SHEET

PRINT YOUR LAST NAME (FIRST SIX LETTERS IF YOUR NAME HAS MORE), THEN BLACKEN THE LETTER CIRCLE WHICH MATCHES EACH LETTER OF YOUR NAME.

○	○	○	○	○	○
A	A	A	A	A	A
B	B	B	B	B	B
C	C	C	C	C	C
D	D	D	D	D	D
E	E	E	E	E	E
F	F	F	F	F	F
G	G	G	G	G	G
H	H	H	H	H	H
I	I	I	I	I	I
J	J	J	J	J	J
K	K	K	K	K	K
L	L	L	L	L	L
M	M	M	M	M	M
N	N	N	N	N	N
O	O	O	O	O	O
P	P	P	P	P	P
Q	Q	Q	Q	Q	Q
R	R	R	R	R	R
S	S	S	S	S	S
T	T	T	T	T	T
U	U	U	U	U	U
V	V	V	V	V	V
W	W	W	W	W	W
X	X	X	X	X	X
Y	Y	Y	Y	Y	Y
Z	Z	Z	Z	Z	Z

IMPORTANT DIRECTIONS FOR MARKING ANSWERS

- Use black lead pencil only (No. $2\frac{1}{2}$ or softer).
- Do NOT use ink or ballpoint pens.
- Make heavy black marks that fill the circle completely.
- Erase cleanly any answer you wish to change.
- Make no stray marks on the answer sheet.

EXAMPLES

WRONG	Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ
WRONG	Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ
WRONG	Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ
RIGHT	Ⓐ Ⓑ Ⓒ ● Ⓔ Ⓕ Ⓖ

PRIVACY ACT STATEMENT

AUTHORITY: 5 USC 552A, The Privacy Act of 1974 (AFR 12-35).
PRINCIPAL PURPOSE: Record question responses to evaluate student progress.
ROUTINE USES: Gather, tabulate, and measure student performance against a predetermined standard. The SSAN is used to identify and analyze responses by positive identification of students.
DISCLOSURE IS MANDATORY: Failure to provide the SSAN will result in the test not being scored and noncompletion of training.

SSAN

0	0	0	0	0	0	0	0	0
1	1	1	1	1	1	1	1	1
2	2	2	2	2	2	2	2	2
3	3	3	3	3	3	3	3	3
4	4	4	4	4	4	4	4	4
5	5	5	5	5	5	5	5	5
6	6	6	6	6	6	6	6	6
7	7	7	7	7	7	7	7	7
8	8	8	8	8	8	8	8	8
9	9	9	9	9	9	9	9	9

USAF SCHOOL OF AEROSPACE MEDICINE

1 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ	22 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ	43 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ	64 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ
2 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ	23 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ	44 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ	65 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ
3 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ	24 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ	45 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ	66 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ
4 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ	25 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ	46 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ	67 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ
5 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ	26 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ	47 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ	68 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ
6 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ	27 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ	48 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ	69 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ
7 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ	28 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ	49 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ	70 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ
8 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ	29 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ	50 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ	71 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ
9 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ	30 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ	51 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ	72 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ
10 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ	31 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ	52 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ	73 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ
11 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ	32 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ	53 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ	74 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ
12 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ	33 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ	54 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ	75 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ
13 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ	34 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ	55 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ	76 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ
14 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ	35 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ	56 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ	77 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ
15 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ	36 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ	57 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ	78 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ
16 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ	37 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ	58 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ	79 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ
17 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ	38 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ	59 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ	80 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ
18 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ	39 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ	60 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ	81 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ
19 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ	40 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ	61 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ	82 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ
20 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ	41 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ	62 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ	83 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ
21 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ	42 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ	63 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ	84 Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ

AFSC Form. 3292, APR 85 REPLACES AND-FORM 3292 OCT 80, WHICH IS OBSOLETE
U.S. GOVERNMENT PRINTING OFFICE: 1985-571-584

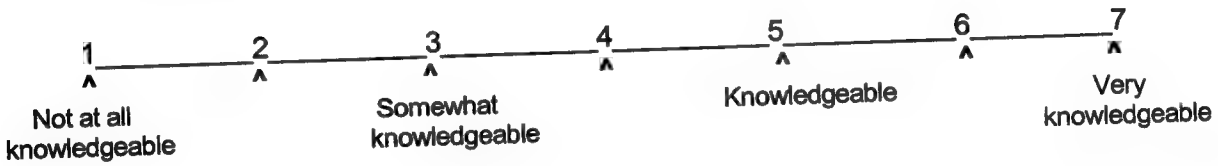
APPENDIX H

Equipment Lab Evaluation Sheets

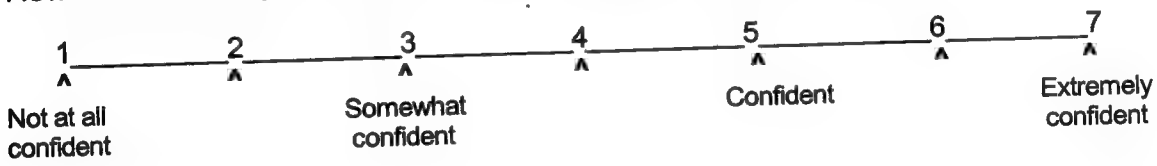
1. Last four digits of SS# _____

2. Start Time _____

3. How knowledgeable are you in the area of the **ALSS**?



4. How confident are you in applying your knowledge of the **ALSS**?



5. Departure time _____

APPENDIX I

Training Assessment Survey

Fill in the letter on the scantron that best represents your response. Note the scale end-points!

1. The lesson objective was _____ presented.

   Clearly A——B——C——D——E——F——G **Not clearly**

2. The instructional sequence was _____ in keeping my attention.

   Inadequate A——B——C——D——E——F——G **Adequate**

3. Lesson content was _____ to understand than I would have liked it to be.

   More Difficult A——B——C——D——E——F——G **Easier**

4. Repetition of lesson content was…

   Stimulating A——B——C——D——E——F——G **Boring**

5. Terms, concepts, and information that were important to know were emphasized…

   Effectively A——B——C——D——E——F——G **Ineffectively**

6. Question-and-answer sessions were _____ for learning.

   Inadequate A——B——C——D——E——F——G **Adequate**

7. The amount of interaction (with students, instructor, computer) was _____ for learning.

   Insufficient A——B——C——D——E——F——G **Sufficient**

8. The pace of the lesson was _____ for learning.

   Inappropriate A——B——C——D——E——F——G **Appropriate**

9. Overall the lesson was...

   Motivating A——B——C——D——E——F——G **Unmotivating**

10. This lesson was_____ to my training.

    Irrelevant A——B——C——D——E——F——G **Relevant**

11. I would prefer to have this lesson delivered as (circle one):

    (A) **Computer-based training** (B) **Instructor's lecture** (C) **Either way**

Fill in the letter on the scantron that best represents your response. Note the scale end-points!

1. It was _____ to use the buttons to navigate through the MENTOR 2010 courseware.

   Easy A——B——C——D——E——F——G **Difficult**

2. The lesson objective was _____ presented.

   Clearly A——B——C——D——E——F——G **Not clearly**

3. The instructional sequence was _____ in keeping my attention.

   Inadequate A——B——C——D——E——F——G **Adequate**

4. Lesson content was _____ to understand than I would have liked it to be.

   More Difficult A——B——C——D——E——F——G **Easier**

5. Repetition of lesson content was…

   Stimulating A——B——C——D——E——F——G **Boring**

6. Terms, concepts, and information that were important to know were emphasized…

   Effectively A——B——C——D——E——F——G **Ineffectively**

7. Question-and-answer sessions were _____ for learning.

   Inadequate A——B——C——D——E——F——G **Adequate**

8. The amount of interaction (with students, instructor, computer) was _____ for learning.

   Insufficient A——B——C——D——E——F——G **Sufficient**

9. The pace of the lesson was _____ for learning.

   Inappropriate A——B——C——D——E——F——G **Appropriate**

10. Overall the lesson was...

    Motivating A——B——C——D——E——F——G **Unmotivating**

11. This lesson was _____ to my training.

    Irrelevant A——B——C——D——E——F——G **Relevant**

12. I would prefer to have this lesson delivered as (circle one):

    (A) **Computer-based training** (B) **Instructor's lecture** (C) **Either way**

13. Estimate the frequency at which you clicked on the "Wings" button?

    Never A——B——C——D——E——F——G **Always**

14. Estimate the frequency at which you clicked on the "Sam" button?

    Never A——B——C——D——E——F——G **Always**

APPENDIX J: Equipment Lab Checklists

PERFORMANCE EVALUATION CHECKLIST
MTP Infusion Pump

1. Mentor _____ Classroom _____

2. Number of students in group being observed _____.

3. Number of pieces of equipment in the lab _____.

ASSEMBLY AND OPERATION	TIME	REF
1. Connect the charger/transformer to the pump receptacle.		
2. Mount the pump in appropriate place.		
3. Connect the IV pump set to the fluid container.		
4. Prime the pump set.		
5. Close the post pump tubing clamp.		
*6. Place the blue inlet connector into upper panel slot.		
*7. Place tubing into rotor tubing track.		
*8. Open post pump tubing clamp.		
*9. Place clear outlet connector into lower panel slot.		
10. Rotate pump rotor one turn.		
11. Connect IV pump set to patient.		
12. Depress standby-off/on switch.		
13. Enter the rate and volume to be infused when "Set" is displayed.		
14. Press Start/Stop switch to stop infusion.		
15. Close all clamps.		
16. Disconnect IV pump set from patient.		
17. Record total volume infused.		
*18. Remove blue inlet connector from the slot.		
*19. Remove tubing from the pump rack.		
*20. Remove clear outlet connector from slot.		
21. Dispose of IV pump set.		

TIME	:05	:10	:15	:20	:25	:30	:35	:40	:45
# OF STUDENTS HANDS-ON									
# OF STUDENTS OBSERVING									

Tally of the number of times the instructor was referenced:_____

QUESTIONS:

PERFORMANCE EVALUATION CHECKLIST

Pulse Oximeter

1. Mentor _____ Classroom _____

2. Number of students in group being observed _____.

3. Number of pieces of equipment in the lab _____.

ASSEMBLY AND OPERATION	TIME	REF
1. Ensure current inspection/calibration sticker.		
2. Ensure component parts are complete.		
3. Attach patient Interface cable into monitor.		
4. Attach sensor to patient interface cable.		
5. Place sensor on finger.		
6. Turn oximeter "ON".		
7. Verify unit is functioning correctly.		
8. Test alarms.		
9. Turn unit "OFF".		
10. Secure components.		

TIME	:05	:10	:15	:20	:25	:30	:35	:40	:45
# OF STUDENTS HANDS-ON									
# OF STUDENTS OBSERVING									

Tally of the number of references made to the instructor or computer:_____

QUESTIONS:

PERFORMANCE EVALUATION CHECKLIST
Operate Cardiac Monitors

1. Mentor _____ Classroom _____

2. Number of students in group being observed _____.

3. Number of pieces of equipment in the lab _____.

ASSEMBLY AND OPERATION	TIME	REF
1. Perform "Quick Look" procedure:		
a. Turn power on.		
b. Select "paddle" mode.		
c. Apply conductive gel to the paddles (verbalize).		
d. Place sternum and apex paddles in appropriate positions on the patient.		
2. Verbalize procedures for operation of the defibrillator:		
a. Select energy to be delivered.		
b. Ensure paddles are in appropriate positions on patient.		
c. Charge defibrillator.		
d. Press record button on paddle.		
e. Clear all personnel from contact with the patient.		
f. Place firm pressure on paddles.		
g. Discharge the defibrillator.		
1. Continuously monitor the patient.		
a. Attach patient cable to the monitor.		
b. Attach electrodes to the cables.		
c. Apply electrodes to appropriate sites on patient		
d. Select appropriate lead (Lead II).		
e. Adjust ECG size as needed.		

TIME	:05	:10	:15	:20	:25	:30	:35	:40	:45
# OF STUDENTS HANDS-ON									
# OF STUDENTS OBSERVING									

Tally of the number of references made to the instructor or computer:_____

QUESTIONS:

PERFORMANCE EVALUATION CHECKLIST
Stryker Frame

1. Mentor _____ Classroom _____

2. Number of students in group being observed _____.

3. Number of pieces of equipment in the lab _____.

ASSEMBLY AND OPERATION	TIME	REF
1. Brief patient		
2. Check IV's know where they are		
3. Secure bag		
4. Gently remove strap around overhead frame		
5. Remove litter strap around patient		
6. Place pillow around patient		
7. Remove lock nuts; keep them in your hand		
8. Remove ant/post frame from equipment litter		
9. Place frame over patient and secure it on patient with 3 litter straps		
10. Remove remaining litter straps from patient		
11. Place 3 litter straps around the ant/post frame and patient		
12. Secure frame with lock nuts—release stabilizer bars and assume squatting position		
13. Pull out locking pins and tilt frame in planned direction		
14. Turn patient quickly and smoothly		
15. Make sure locking pins are in place		
16. Check condition of patient		
17. Check IV tubing		
18. Remove all 3 litter straps around patient and frame		
19. Remove lock nut from head of frame and place strap around patient		
20. Remove lock nut from foot of frame and remove frame from bolts		
21. Replace bolts		
22. Replace stabilizer straps		
23. Replace 2 litter straps		
24. Place litter strap around frame		

TIME	:05	:10	:15	:20	:25	:30	:35	:40	:45
# OF STUDENTS HANDS-ON									
# OF STUDENTS OBSERVING									

Tally of the number of references made to the instructor or computer:_____

QUESTIONS:

PERFORMANCE EVALUATION CHECKLIST
Collins Traction

1. Mentor _____ Classroom _____

2. Number of students in group being observed _____.

3. Number of pieces of equipment in the lab _____.

ASSEMBLY AND OPERATION	TIME	REF
1. **Physician hold patient in traction		
2. Secure retainer bar (toward foot of Stryker frame)		
3. Remove cleavis device		
4. Pass cable through orifice in Stryker frame		
5. Reattach cleavis to cable		
6. Slide cleavis into face canvas		
7. Check minimum distance on cable		
8. Attach elastic cable to front end		
9. Attach scale to retainer bar		
10. Set traction		
11. Check setting		

TIME	:05	:10	:15	:20	:25	:30	:35	:40	:45
# OF STUDENTS HANDS-ON									
# OF STUDENTS OBSERVING									

Tally of the number of references made to the instructor or computer:_____

QUESTIONS:

PERFORMANCE EVALUATION CHECKLIST
Impact Model 308M Portable Suction Unit

1. Mentor _____ Classroom _____

2. Number of students in group being observed _____.

3. Number of pieces of equipment in the lab _____.

ASSEMBLY AND OPERATION	TIME	REF
1. *Oxygenate and monitor patient.		
2. Open and secure lid.		
3. Connect Impact Suction to 115 VAC/50-400 Hz power source.		
4. Switch to AC mode, or battery if no AC power is available.		
5. Select appropriate vacuum setting.		
6. Attach sterile suction catheter to suction tubing.		
7. *Suction patient, monitor and limit to 10 seconds.		
8. Monitor collection canister and empty as necessary.		
9. Switch Impact Suction Unit OFF when suctioning is complete.		
10. *Oxygenate patient.		

TIME	:05	:10	:15	:20	:25	:30	:35	:40	:45
# OF STUDENTS HANDS-ON									
# OF STUDENTS OBSERVING									

Tally of the number of references made to the instructor or computer:_____

QUESTIONS:

PERFORMANCE EVALUATION CHECKLIST
Laerdal Manual Resuscitator

1. Mentor ____ Classroom ____

2. Number of students in group being observed _____.

3. Number of pieces of equipment in the lab _____.

ASSEMBLY AND OPERATION	TIME	REF
1. Select the appropriate size resuscitator and face mask.		
2. Connect the oxygen reservoir bag to the reservoir valve.		
3. Connect the reservoir valve to the intake valve.		
4. Connect oxygen tubing to inlet nipple and flow meter outlet.		
5. Set flow to "Flush".		
6. Connect appropriate size mask to resuscitator.		
7. Obtain patient airway and protect it with oropharyngeal airway.		
8. Seal mask over patients mouth and nose.		
9. Ventilate while observing for appropriate chest movement.		

TIME	:05	:10	:15	:20	:25	:30	:35	:40	:45
# OF STUDENTS HANDS-ON									
# OF STUDENTS OBSERVING									

Tally of the number of references made to the instructor or computer:_____

QUESTIONS:

PERFORMANCE EVALUATION CHECKLIST ALSS MODEL 185
Transport Incubator

1. Mentor _____ Classroom _____

2. Number of students in group being observed _____.

3. Number of pieces of equipment in the lab _____.

ASSEMBLY AND OPERATION	TIME	REF
1. Ensure the calibration sticker has current date.		
2. Inspect the incubator for damage.		
3. Inventory accessory kit and ensure serviceability of the items.		
4. Ensure each oxygen cylinder is secure and has at least 1000 psi.		
5. Connect Incubator to a 115 VAC/50-400Hz power source.		
6. Switch incubator ON and ensure AC OP indicator illuminates.		
7. Check the airflow at right end of the infant support tray.		
8. Set the temperature control to 37.0 degrees Celsius, and observe for increase of temperature on the display.		
9. Test the observation light.		
10. Press and hold test switch, ensure all LEDs illuminate, and that audible alarm sounds.		
11. Disconnect AC power source and ensure BAT OP LED illuminates.		
12. Repeat from "check air flow" Step #7 to "press and hold" (step 10).		
13. Ensure BAT CHG LED illuminates.		
14. Ensure the humidification sponge is clean and is in the reservoir.		
15. Check the IV pole is secure in its storage bracket.		
16. Ensure the mounting brackets are in place and undamaged.		

TIME	:05	:10	:15	:20	:25	:30	:35	:40	:45
# OF STUDENTS HANDS-ON									
# OF STUDENTS OBSERVING									

Tally of the number of references made to the instructor or computer:_____

QUESTIONS:

PERFORMANCE EVALUATION CHECKLIST
MiniOx III

1. Mentor ____ Classroom ____

2. Number of students in group being observed _____.

3. Number of pieces of equipment in the lab _____.

ASSEMBLY AND OPERATION	**TIME**	**REF**
1. Check calibration and inspection sticker for accuracy.		
2. Inventory and inspect the MiniOx III and components.		
3. Connect sensor to cable and monitor.		
4. Connect oxygen tubing to oxygen source, and connect tubing to the T-Adapter.		
5. Turn oxygen on at 4 liters/minute.		
6. Insert the sensor into the T-Adapter.		
7. Press "READ O2" after 3-5 minutes.		
8. Press "CALIBRATE", then press "UNLOCK".		
9. Set display to 100%.		
10. Turn oxygen off.		
11. Remove sensor from T-Adapter and expose it to ambient air.		
12. Check for display reading of 20.8%+/-2% after 5 minutes.		
13. Press "OFF" to turn the monitor off.		
14. Store MiniOx and components in carrying case until needed.		

TIME	:05	:10	:15	:20	:25	:30	:35	:40	:45
# OF STUDENTS HANDS-ON									
# OF STUDENTS OBSERVING									

Tally of the number of references made to the instructor or computer:_____

QUESTIONS:

PERFORMANCE EVALUATION CHECKLIST
PTLox

1. Mentor _____ Classroom _____

2. Number of students in group being observed _____.

3. Number of pieces of equipment in the lab _____.

ASSEMBLY AND OPERATION	TIME	REF
1. Secure the PTLOX.		
2. Remove the flow control valves.		
*3a. Remove hoses and connect to the flow control valves.		
b. Set control valves to "0" *lpm*.		
c. Open oxygen outlet cover and remove oxygen outlet caps.		
*4. Insert Schrader end of hoses into oxygen outlets.		
5. Set control valves to "15" lpm, and ensure pressure remains greater than 45 PSI.		
6. Smell emitted oxygen for odors.		
7. Set flow control valve to "0" lpm.		
8. Attach humidifier adapters to humidification bottles.		
9. Attach humidifier unit to flow control valve.		
10. Secure flow control/valve/humidification unit.		
11. Connect oxygen delivery device to humidification unit.		
12. Set flow to prescribed quantity.		
13. Place delivery device on patient.		
14. Turn flow control valve to "0" lpm.		
15. Remove oxygen hose from the oxygen outlet port.		

TIME	:05	:10	:15	:20	:25	:30	:35	:40	:45
# OF STUDENTS HANDS-ON									
# OF STUDENTS OBSERVING									

Tally of the number of references made to the instructor or computer:_____

QUESTIONS:

PERFORMANCE EVALUATION CHECKLIST
Bear 33 Ventilator

1. Mentor _____ Classroom _____

2. Number of students in group being observed _____.

3. Number of pieces of equipment in the lab _____.

ASSEMBLY AND OPERATION	**TIME**	**REF**
1. Check the calibration and inspection decal for currency.		
2. Check to insure all component parts are in good condition.		
3. Plug a standard flowmeter, with a nipple adapter, into an oxygen source and connect oxygen tubing to the flowmeter.		
4. Connect the other end of the tubing to the oxygen inlet port located at the front center of the litter mounting sled.		
5. Tubing set-up:		
a. Attach the six inch opaque tube to the large bore opening next to the oxygen inlet port. Connect the other end of the tube to the AIR INLET port located in the ventilator.		
b. Remove the 1/8" and 3/16" tubing attached to the exhalation tube and secure to the inhalation tube.		
c. Connect the single inlet port to the port labeled "PATIENT" on the ventilator. Connect the other end to the inlet port of the disposable in-line bacteria filter.		
d. Connect the in-line bacteria filter to the INLET PORT of the humidifier and the inhalation tube to the OUTLET PORT.		
e. Connect the 3/16' tube to the inlet port labeled "PROX TEE".		
f. Connect the 1/8" tube to the inlet port labeled "BALLOON".		
g. Connect the 3/16" tube to the elbow connector.		
h. Install the oxygen analyzer T-adapter and in line temperature gauge.		
i. Connect the PEEP valve to the connector tube and to the exhalation outlet port.		
1. Ventilator set-up:		
a. Place the ventilator mounting sled on a litter placed level with or below the patient.		
b. Turn the ventilator ON by depressing the ON/OFF touch pad.		
c. Connect a 500ml rubber test lung to the free end of the patient tracheostomy flextube connector.		
d. Depress the "TEST" button.		
e. Depress the UNLOCK button and observe the visual alarm.		

TIME	:05	:10	:15	:20	:25	:30	:35	:40	:45
# OF STUDENTS HANDS-ON									
# OF STUDENTS OBSERVING									

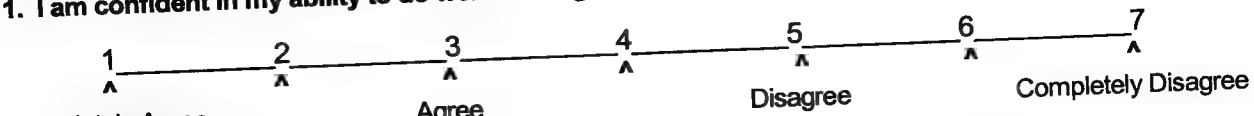
Tally of the number of references made to the instructor or computer:_____

QUESTIONS:

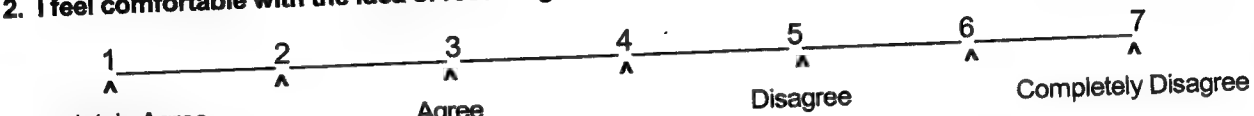
APPENDIX K: Computer Attitude Survey

Circle the number for each item that best represents how you feel about computers.

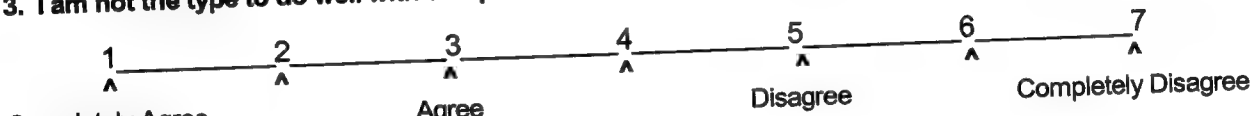
1. I am confident in my ability to do well learning from computers.



2. I feel comfortable with the idea of receiving FN/AET training from computers.

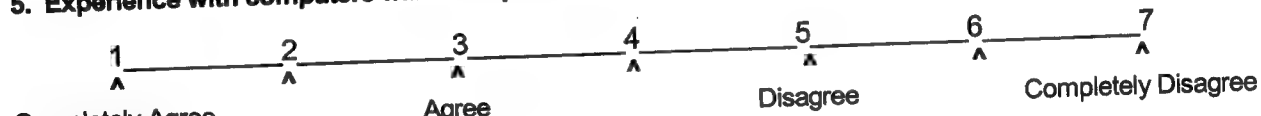


3. I am not the type to do well with computers.

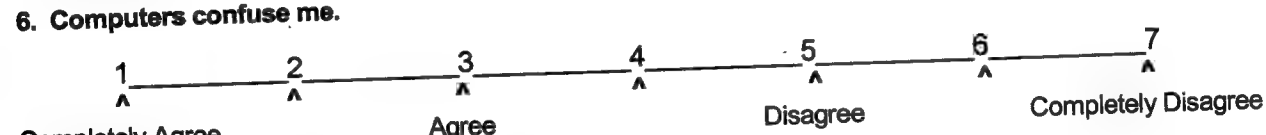


4. I would prefer to use computers for my FN/AET training.

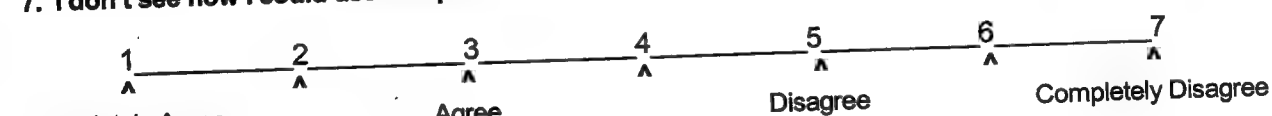
5. Experience with computers will be helpful in my future training.



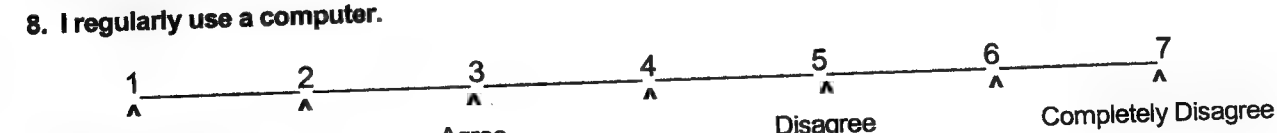
6. Computers confuse me.



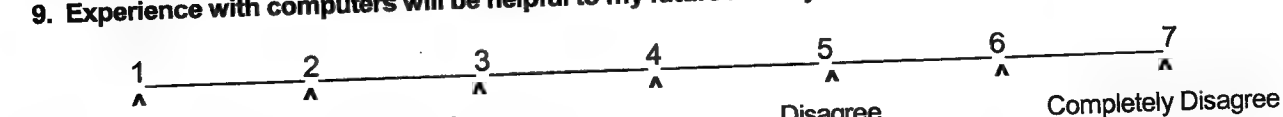
7. I don't see how I could use computers to learn FN/AET skills.



8. I regularly use a computer.



9. Experience with computers will be helpful to my future military career.



APPENDIX L: Learning Objectives Rating Survey

Last four digits of SSN _____

Please read the following pairs of objectives. After you have read both objectives, decide if they are dissimilar, similar, or identical and mark the appropriate box. DO NOT discuss your ratings with anyone.

List the FN/AET classes you teach:

A. Given a PT LOX with accessory kit on an aircraft trainer, properly preflight, assemble and operate the unit with use of references IAW the USAFR PDC AE Equipment Guide Checklist with 100% accuracy.

B. Outline the preflight and in-flight considerations for the PT LOX.

❑ Dissimilar ❑ Similar ❑ Identical

A. Preflight the MiniOX III oxygen analyzer, using references and IAW AFRES PDC equipment guidelines, with 70% accuracy. Describe how to operate the MiniOx III oxygen analyzer.

B. Given a Minox III Oxygen Analyzer, an E or H type oxygen cylinder and with the use of references, calibrate, monitor and adjust oxygen concentrations to 100% IAW the US Air Force Reserve PDC Equipment Guide checklist with 70% accuracy.

❑ Dissimilar ❑ Similar ❑ Identical

A. Identify the basic principles of patient care for a patient with abdominal trauma.

B. Identify the basic nursing management principles for patients with abdominal trauma.

❑ Dissimilar ❑ Similar ❑ Identical

A. Safely turn a weighted mannequin on a Stryker A-frame. Safely transfer a weighted mannequin on a Stryker A-frame from swinging weights to a Collins traction device.

B. Given a weighted mannequin on a Stryker "a" Frame and with the use of references, safely turn the mannequin IAW the USAFR PDC AE Equipment Guide Checklist with 70% accuracy. 2. Identify the proper enplaning and deplaning consideration for a patient on a Stryker A Frame IAW the USAFR PDC AE Equipment Guide.

❑ Dissimilar ❑ Similar ❑ Identical

A. Describe the characteristics of the ALSS.

B. Given an Airborne Life Support System and with the use of references, preflight the ALSS IAW the US Air Force Reserve PDC Equipment Guide checklist with 70% accuracy.

❑ Dissimilar ❑ Similar ❑ Identical

A. Distinguish between hypovolemic, cardiogenic and distributive shock.

B. Comprehend the appropriate in-flight nursing measures for a patient in shock.

❑ Dissimilar ❑ Similar ❑ Identical

A. Identify the components, operation, and functions of the Theater Aeromedical Evacuation System (TAES).

B. You will learn the characteristics of TAES including: its components and functions, its organization, staffing and capability. You will also learn how the system operates and how its elements interact within the theater of operation.

❑ Dissimilar ❑ Similar ❑ Identical

A. Identify the preflight and inflight management of the orthopedic patient.

B. Describe the appropriate preflight and in-flight management of the orthopedic patient.

❑ Dissimilar ❑ Similar ❑ Identical

A. Identify the principles of nursing management with the aeromedical evacuation system for patients with psychosocial disturbances and/or victims of disaster.

B. Accurately state the principles of nursing management for patients with psychological disturbances and victims of disasters and plan for their appropriate care within the aeromedical evacuation system.

❑ Dissimilar ❑ Similar ❑ Identical

A. Identify the AECM's actions and responsibilities for mission irregularities.

B. Identify the AECM's actions and responsibilities for selected mission irregularities.

❑ Dissimilar ❑ Similar ❑ Identical

A. Given a BCI 1040 Pulse Oximeter and the use of references, properly preflight the pulse oximeter IAW the USAFR PDC AE Equipment Guide Checklist with 70% accuracy. 2. Given a Heimlich Valve, a chest draining unit and the use of references, properly assemble the chest unit and attach the Heimlich valve IAW the USAFR PDC AE Equipment Guide Checklist with 70% accuracy. 3. Given a Politzer bag, a mannequin and the use of references, demonstrate the proper procedure for clearing an ear block IAW the USAFR PDC AE Equipment Guide Checklist with 70% accuracy.

B. Assemble a chest drainage unit and attach a Heimlich valve, IAW U.S. Air Force Reserve PDC AE Equipment checklist, with 70% accuracy. Demonstrate the proper procedure, using a Politzer Bag, for clearing an ear block, IAW U.S. Air Force Reserve PDC AE Eq

❑ Dissimilar ❑ Similar ❑ Identical

A. Set up and operate the MTP Infusion Pump, IAW AFRES PDC AE Equipment Checklist, with 70% accuracy. Identify controls and indicators, and know how to preflight, set up, operate, and clean/store the MTP.

B. Given an MTP infusion pump, IV accessories and with the use of references, properly preflight and operate the infusion pump IAW the USAFR PDC AE Equipment Guide Checklist with 70% accuracy.

❑ Dissimilar ❑ Similar ❑ Identical

A. Describe the appropriate preflight and in-flight management of the OB patient.

B. Identify the appropriate preflight and inflight management of the obstetrical patient.

❑ Dissimilar ❑ Similar ❑ Identical

A. Describe the process involved in moving combat casualties form the forward to rear Medical Treatment Facilities (MTFs) by means of the Theater Aeromedical Evacuation (TAES).

B. Explain and give examples of the processes involved in moving casualties from the combat zone to rear medical facilities by means of the TAES.

❑ Dissimilar ❑ Similar ❑ Identical

A. Identify the flight responsibilities and scheduling restrictions of aeromedical evacuation crew members.

B. Identify the flight responsibilities and limitation of aeromedical evacuation crew members.

❑ Dissimilar ❑ Similar ❑ Identical

A. IAW Air Force Reserve PDC AE Equipment checklist, be able to preflight, assemble and operate the ECAS with 70% accuracy. Outline the preflight and in-flight considerations for the ECAS.

B. Given an ECAS, a 110-120 VAC power source and the use of references, properly preflight, assemble and operate the ECAS IAW the USAFR PDC AE Equipment Guide Checklist with 70% accuracy.

❑ Dissimilar ❑ Similar ❑ Identical

A. Review the Aeromedical Evacuation System, its mission, advantages, theaters of operation, major command roles and responsibilities, force structure, squadrons, patient regulating and airlift coordination process, crew composition, and support agencies.

B. Explain the organization and operation of the AE system.

❑ Dissimilar ❑ Similar ❑ Identical

A. Given a 308M suction Unit and a 110-120 VAC power source, properly power up and set suction parameters without the use of references IAW the USAFR PDC AE Equipment Guide Checklist with 100% accuracy.

B. Given a Laerdal Manual Resuscitator (Adult, Child, Infant), properly assemble and operate the resuscitator, IAW the AFRES PDC AE Equipment checklist with 100% accuracy. On the Laerdahl Manual Resuscitator, comprehend the (1) components, (2) preflight...

❑ Dissimilar ❑ Similar ❑ Identical

A. Identify the appropriate preflight and inflight patient care management of the severely burned patients.

B. Recognize the preflight and in-flight care management of severely burned patients.

❑ Dissimilar ❑ Similar ❑ Identical

A. Given a Bear 33 ventilator, a 110-120 VAC/60 cycle power source, a test lung and with the use of references, properly preflight the Bear 33 ventilator IAW the USAFR PDC AE Equipment Guide Checklist with 70% accuracy.

B. Given a Bear Ventilator, a 110-120 VAC/60 Hz power source, a test lung and use of references, properly preflight the Bear 33 Ventilator IAW the US Air Force PDC AE Equipment checklist with 70% accuracy. Explain how to use the Bear 33 Ventilator during AE.

❑ Dissimilar ❑ Similar ❑ Identical

A. Identify the preflight and inflight management of the pediatric patient.

B. Describe the principles of preflight and in-flight pediatric nursing care and management.

❑ Dissimilar ❑ Similar ❑ Identical

A. Describe preflight/in-flight nursing considerations for patients with EENT disorders.

B. Identify preflight and inflight nursing care needs for patients with EENT disorders.

❑ Dissimilar ❑ Similar ❑ Identical

A. Identify the preflight and inflight management of patients with neurological disorders.

B. Describe the appropriate preflight and in-flight management of patients with neurological disorders.

❑ Dissimilar ❑ Similar ❑ Identical

A. Describe the preflight and in-flight management of patients with cardiovascular disorders.

B. Summarize the preflight and inflate patient care requirements and the effects of the stresses of flight, for patients with cardiovascular disorders.

❑ Dissimilar ❑ Similar ❑ Identical

A. Describe the appropriate preflight and in-flight nursing management of the GI/GU patient.

B. Identify the appropriate preflight and inflight nursing management of the GI/GU patient.

❑ Dissimilar ❑ Similar ❑ Identical

A. 1. Describe the patient classification and movement precedence system and its implications for aeromedical evacuation 2. Identify the appropriate aeromedical evacuation crew member (AECM) responsibilities for a prisoner under guard.

B. Determine the patient classification and movement precedence system and its implications for aeromedical evacuation.

❑ Dissimilar ❑ Similar ❑ Identical

A. Identify the appropriate preflight/in-flight nursing care to provide respiratory patients.

B. Identify the appropriate preflight and inflight nursing care of respiratory patients.

❑ Dissimilar ❑ Similar ❑ Identical

A. Describe the use of the forms required in AE and the methods for completing the information on the forms, specifically you will demonstrate samples of behavior.

B. Identify the use of and the methods for completing information found on forms used in Aeromedical Evacuation.

❑ Dissimilar ❑ Similar ❑ Identical

APPENDIX M: Student Consent Form

The instructional effectiveness of multimedia, interactive courseware delivered in the Medical Education Network, Training for Operational Readiness (MENTOR) 2010 system is in the second phase of evaluation. Of importance to the evaluation is validating the MENTOR 2010 courseware. Mei Technology Corporation has been tasked to conduct the evaluation of the MENTOR 2010 courseware as it contributes to FN/AET training.

PRIVACY ACT

Under the authority of 5 USC 301 Department Regulation, and Executive Order 9397 dated 22 November 1943 (SSN), you are requested to voluntarily participate in the MENTOR 2010 Project.

Half of you will be randomly assigned to receive a portion of FN/AET training on computers. The other half will receive the FN/AET course as it is traditionally taught. Both groups will complete paper-based performance measures and opinion surveys before, during, and after FN/AET training. Knowledge structure assessment using a computerized ratings task may also be conducted.

The data you provide will be used to help improve Air Force FN/AET training. Once the data have been collected, identifiable marks will be removed from your response sheets. Information collected will be used for group statistical purposes only. Data will NOT be divulged to anyone who is not a member of the research team.

Your voluntary participation is sincerely appreciated. There are no potential risks associated with participation in this research.

I agree to participate in the research project described above.

_____

Signature Date

APPENDIX N: Formative Evaluation Results

Results from the Formative Evaluation

EENT

[a b] indicates statistically different values

	Traditional (n = 37)	MENTOR 2010 (n = 15)
Pretest	4.9	4.5
Posttest	6.2	6.3
Gain scores	1.3	1.8
Pre-knowledge	3.6	3.1
Post-knowledge	3.9	4.3
Difference	0.3[a]	1.2[b]
Pre-confidence	3.3	2.9
Post-confidence	3.7	4.0
Difference	0.4[a]	1.1[b]
Time (minutes)	43.0	51.5 (range 35-66)

Patient Classification

	Traditional (n = 38)	MENTOR 2010 (n = 19)
Pretest	5.0	5.8
Posttest	7.9	7.8
Gain scores	2.9	2.0
Pre-knowledge	1.9	2.8
Post-knowledge	3.9	4.0
Difference	2.0	1.2
Pre-confidence	1.9	2.8
Post-confidence	3.9	4.1
Difference	2.0	1.3
Time (minutes)	65.0	66.6 (range 43-90)

Mental Health

	Traditional (n = 38)	MENTOR 2010 (n = 20)
Pretest	6.4	6.4
Posttest	8.3	8.3
Gain scores	1.9	1.9
Pre-knowledge	2.4	3.1
Post-knowledge	4.0	4.5
Difference	1.6	1.4
Pre-confidence	2.5	3.1
Post-confidence	4.0	4.4
Difference	1.5	1.3
Time (minutes)	65.0	28.6 (range 9-62)

Mission Irregularities

[a b] Indicates statistically different values

	Traditional (n = 39)	MENTOR 2010 (n = 19)
Pretest	5.8	5.4
Posttest	6.8	6.6
Gain scores	1.0	1.2
Pre-knowledge	2.4	3.0
Post-knowledge	4.3	3.9
Difference	1.9[a]	0.9[b]
Pre-confidence	2.4	2.8
Post-confidence	4.1	3.5
Difference	1.7[a]	0.7[b]
Time (minutes)	62.0	50.0 (range 22-70)

MTP

[a b] indicates statistically different values

	Traditional (n = 40)	MENTOR 2010 (n = 19)
Pretest	4.1	3.5
Posttest	7.1	6.9
Gain scores	3.0	3.4
Pre-knowledge	2.2	1.2
Post-knowledge	3.9	4.2
Difference	1.7[a]	3.0[b]
Pre-confidence	2.1	1.4
Post-confidence	3.7	4.1
Difference	1.6[a]	2.7[b]
Time (minutes)	44.0	50.7 (range 29-84)

LifePak 10

[a b] indicates statistically different values

	Traditional (n = 40)	MENTOR 2010 (n = 18)
Pretest	5.4	5.4
Posttest	7.8	7.4
Gain scores	2.4	2.0
Pre-knowledge	3.5	2.8
Post-knowledge	4.3	4.2
Difference	0.8[a]	1.4[b]
Pre-confidence	3.6	2.7
Post-confidence	4.3	4.0
Difference	0.7	1.3
Time (minutes)	40.0	55.7 (range 40-70)

Personal Responsibilities

[a b] indicates statistically different values

	Traditional (n = 39)	MENTOR 2010 (n = 19)
Pretest	5.0	4.3
Posttest	7.3	7.8
Gain scores	2.3[a]	3.4[b]
Pre-knowledge	2.2	1.5
Post-knowledge	3.7	4.2
Difference	1.6[a]	2.8[b]
Pre-confidence	2.2	1.3
Post-confidence	3.5	4.1
Difference	1.3a	2.8[b]
Time (minutes)	85.0	54.3 (range 35-87)

Respiratory Disorders

	Traditional (n = 39)	MENTOR 2010 (n = 20)
Pretest	5.8	6.1
Posttest	7.2	7.6
Gain scores	1.4	1.5
Pre-knowledge	3.7	4.8
Post-knowledge	4.4[a]	5.1[b]
Difference	0.7	0.3
Pre-confidence	3.8	4.7
Post-confidence	4.3	5.2
Difference	0.5	0.5
Time (minutes)	78.0	45.5 (range 20-70)

Suction/Laerdal

[a b] indicates statistically different values

	Traditional (n = 39)	MENTOR 2010 (n = 20)
Pretest	4.6	5.9
Posttest	6.3	7.0
Gain scores	1.7[a]	1.1[b]
Pre-knowledge	2.6	3.4
Post-knowledge	3.9	4.7
Difference	1.3	1.3
Pre-confidence	2.6	3.3
Post-confidence	3.9	4.7
Difference	1.3	1.4
Time (minutes)	20.0	35.6 (range 25-55)

Stryker/Collins

[a b] indicates statistically different values

	Traditional (n = 38)	MENTOR 2010 (n = 20)
Pretest	3.9	4.6
Posttest	7.5	6.8
Gain scores	3.6[a]	2.2[b]
Pre-knowledge	1.5	1.6
Post-knowledge	3.5	3.5
Difference	2.0	1.9
Pre-confidence	1.6	1.7
Post-confidence	3.4	3.4
Difference	1.8	1.7
Time (minutes)	98.0	71.5 (range 58-95)

Burns

	Traditional (n = 36)	MENTOR 2010 (n = 17)
Pretest	6.9	5.9
Posttest	8.6	8.6
Gain scores	1.7	2.7
Pre-knowledge	3.3	3.0
Post-knowledge	3.9	4.2
Difference	0.6	1.2
Pre-confidence	3.4	2.9
Post-confidence	3.9	4.2
Difference	0.5	1.3
Time (minutes)	48.0	55.9 (range 37-76)

Neurology

[a,b] indicates statistically different values
[NS] statistically non-significant gain score

	Traditional (n = 36)	MENTOR 2010 (n = 17)
Pretest	7.3	6.0
Posttest	7.6	8.0
Gain scores	0.3[a,NS]	2.0[b]
Pre-knowledge	3.3	3.1
Post-knowledge	3.9	4.1
Difference	0.6	1.0
Pre-confidence	3.4	3.2
Post-confidence	3.7	4.2
Difference	0.3	1.0
Time (minutes)	41.0	33.8 (range 21-45)

Pediatrics

[a b] indicates statistically different values
[NS] statistically non-significant gain score

	Traditional (n = 31)	MENTOR 2010 (n = 19)
Pretest	4.1	4.9
Posttest	5.0	4.9
Gain scores	0.9	0.0[NS]
Pre-knowledge	3.7	3.5
Post-knowledge	4.4	3.6
Difference	0.7[a]	0.1[b]
Pre-confidence	3.7	3.5
Post-confidence	4.3	3.6
Difference	0.6	0.1
Time (minutes)	57.0	27.8 (range 9-40)

Obstetrics

	Traditional (n = 31)	MENTOR 2010 (n = 19)
Pretest	5.8	5.2
Posttest	6.5	6.3
Gain scores	0.7	1.1
Pre-knowledge	3.6	3.0
Post-knowledge	4.4	3.6
Difference	0.8	0.6
Pre-confidence	3.6	2.8
Post-confidence	4.5	3.6
Difference	0.9	0.8
Time (minutes)	20.0	33.0 (range 20-45)

Cardiovascular Disorders

	Traditional (n = 38)	MENTOR 2010 (n = 20)
Pretest	6.2	6.1
Posttest	7.1	7.7
Gain scores	0.9	1.6
Pre-knowledge	3.8	3.3
Post-knowledge	4.6	3.8
Difference	0.8	0.5
Pre-confidence	4.0	3.3
Post-confidence	4.5	3.7
Difference	0.5	0.4
Time (minutes)	42.0	36.5 (range 26-50)

Orthopedics

[a b] indicates statistically different values

	Traditional (n = 38)	MENTOR 2010 (n = 20)
Pretest	5.6	5.3
Posttest	6.7	7.0
Gain scores	1.1	1.7
Pre-knowledge	3.5	3.1
Post-knowledge	4.5	3.5
Difference	1.0[a]	0.4[b]
Pre-confidence	1.9	3.1
Post-confidence	2.9	3.6
Difference	1.0	0.5
Time (minutes)	58.0	41.9 (range 25-81)

MiniOx

[a b] indicates statistically different values

	Traditional (n = 39)	MENTOR 2010 (n = 20)
Pretest	3.7	3.5
Posttest	7.3	7.1
Gain scores	3.6	3.6
Pre-knowledge	1.7	1.9
Post-knowledge	3.4	3.0
Difference	1.7	1.1
Pre-confidence	1.6	2.3
Post-confidence	3.3	2.9
Difference	1.7[a]	0.6[b]
Time (minutes)	50.0	38.5 (range 18-55)

ALSS

* difference approaching statistical significance at the .06 level

	Traditional (n = 38)	MENTOR 2010 (n = 20)
Pretest	3.5^	4.5^
Posttest	6.6	7.4
Gain scores	3.1	2.9
Pre-knowledge	1.6	1.7
Post-knowledge	3.4	2.9
Difference	1.8	1.2
Pre-confidence	1.6	1.6
Post-confidence	3.3	2.7
Difference	1.7	1.1
Time (minutes)	56.0	47.9 (range 28-75)

ECAS

	Traditional (n = 39)	MENTOR 2010 (n = 20)
Pretest	3.7	4.7
Posttest	7.2	8.1
Gain scores	3.5	3.4
Pre-knowledge	1.8	2.0
Post-knowledge	3.4	4.1
Difference	1.6	2.1
Pre-confidence	1.9	2.1
Post-confidence	3.4	4.1
Difference	1.5	2.0
Time (minutes)	23.0	22.7 (range 15-40)

Theater AE

	Traditional (n = 39)	MENTOR 2010 (n = 18)
Pretest	3.6	3.5
Posttest	5.6	5.7
Gain scores	2.0	2.2
Pre-knowledge	2.0	1.8
Post-knowledge	3.0	3.1
Difference	1.0	1.3
Pre-confidence	1.9	1.9
Post-confidence	2.9	2.9
Difference	1.0	1.0
Time (minutes)	81.0	64.4 (range 9-97)

Combat Casualty

[a b] indicates statistically different values

	Traditional (n = 39)	MENTOR 2010 (n = 18)
Pretest	4.1	2.8
Posttest	5.7	5.6
Gain scores	1.6	2.8
Pre-knowledge	2.3	1.6
Post-knowledge	3.0	3.2
Difference	0.7[a]	1.6[b]
Pre-confidence	2.3	1.6
Post-confidence	3.0	3.1
Difference	0.7a	1.5[b]
Time (minutes)	43.0	47.3 (range 30-80)

Shock

	Traditional (n = 37)	MENTOR 2010 (n = 20)
Pretest	5.9	6.1
Posttest	7.6	7.6
Gain scores	1.7	1.5
Pre-knowledge	4.0	3.2
Post-knowledge	4.6	3.8
Difference	0.6	0.6
Pre-confidence	4.0	3.3
Post-confidence	4.6	3.9
Difference	0.6	0.6
Time (minutes)	40.0	35.2 (range 3-60)

Bear 33

[a b] indicates statistically different values

	Traditional (n = 38)	MENTOR 2010 (n = 20)
Pretest	4.9	4.4
Posttest	7.5	6.5
Gain scores	2.6	2.1
Pre-knowledge	1.6	1.6
Post-knowledge	3.6	2.5
Difference	2.0[a]	0.9[b]
Pre-confidence	1.6	1.7
Post-confidence	3.6	2.3
Difference	2.0[a]	0.6[b]
Time (minutes)	146.0	—

PT Lox

[a b] indicates statistically different values

	Traditional (n = 38)	MENTOR 2010 (n = 19)
Pretest	4.1	3.8
Posttest	7.9	7.2
Gain scores	3.8	3.4
Pre-knowledge	1.7	1.4
Post-knowledge	3.8	4.2
Difference	2.1[a]	2.8[b]
Pre-confidence	1.9	1.4
Post-confidence	3.8	4.3
Difference	1.9[a]	2.9[b]
Time (minutes)	46.0	32.4 (range 8-44)

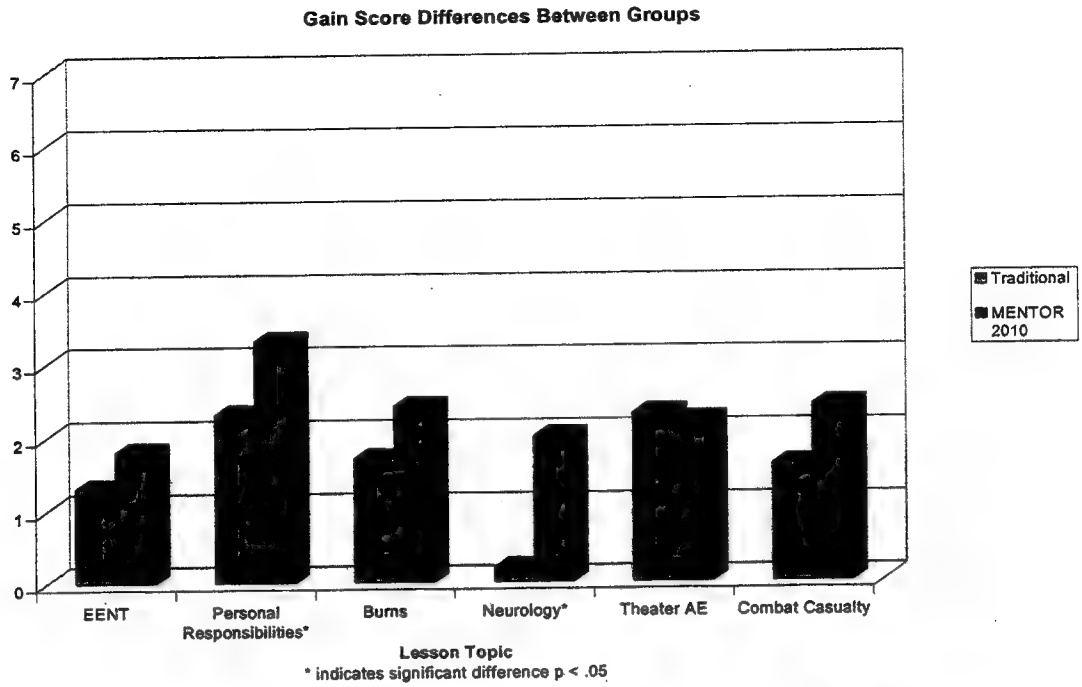
Combat Abdominal

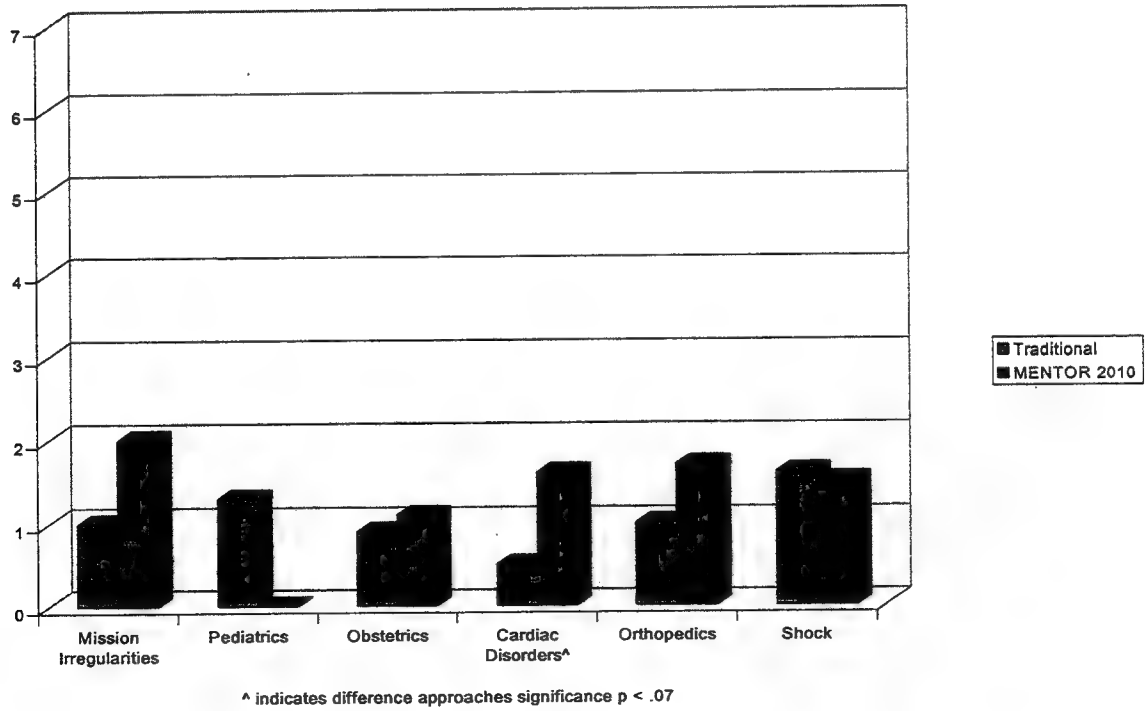
	Traditional (n = 39)	MENTOR 2010 (n = 19)
Pretest	5.6	6.2
Posttest	7.4	8.4
Gain scores	1.8	2.2
Pre-knowledge	3.0	3.8
Post-knowledge	3.8	4.4
Difference	0.8	0.6
Pre-confidence	3.0	3.8
Post-confidence	3.8	4.4
Difference	0.8	0.6
Time (minutes)	30.0	37.2 (range 20-55)

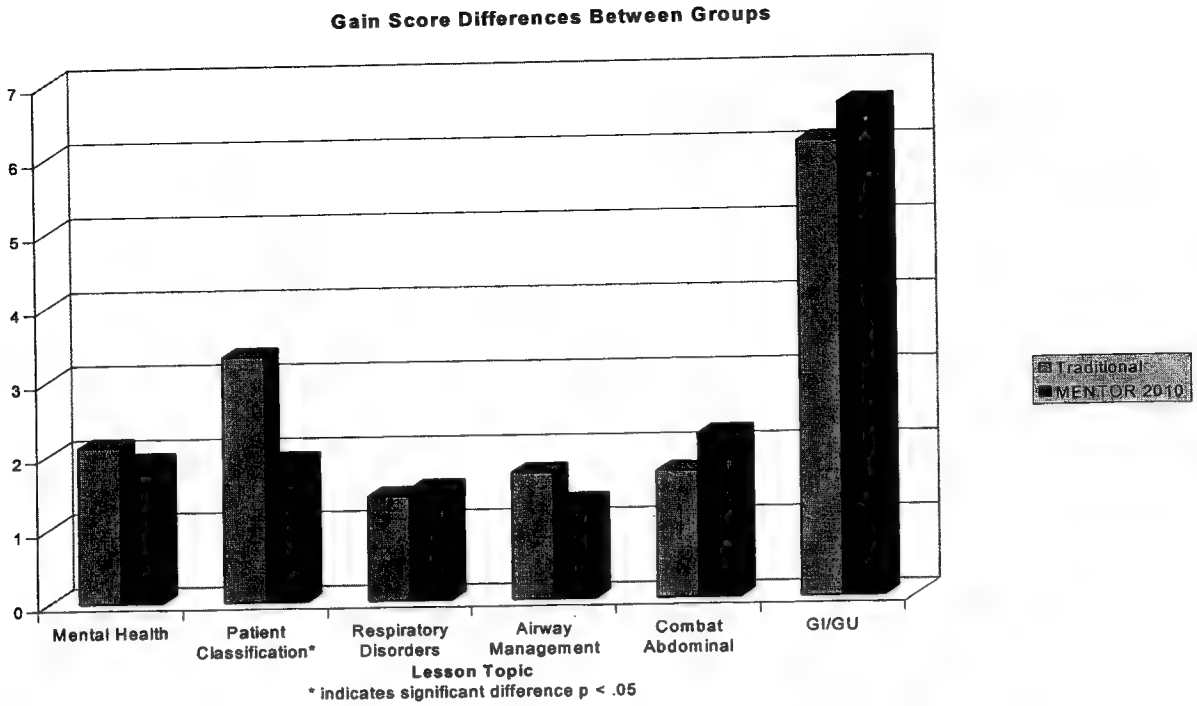
GI/GU

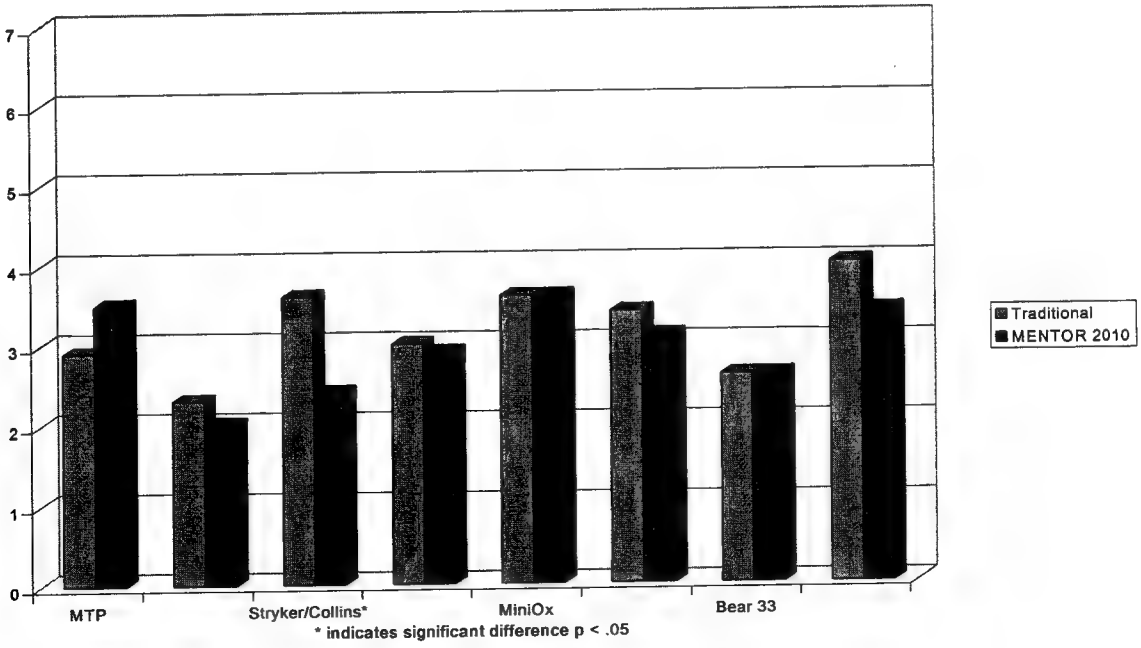
	Traditional (n = 39)	MENTOR 2010 (n = 19)
Pretest	6.1	6.6
Posttest	7.2	8.2
Gain scores	1.1	1.6
Pre-knowledge	3.3	4.0
Post-knowledge	3.8	4.6
Difference	0.5	0.6
Pre-confidence	3.2	4.0
Post-confidence	3.7	4.8
Difference	0.5	0.8
Time (minutes)	47.0	32.6 (range 25-45)

APPENDIX O: Gain Score Differences



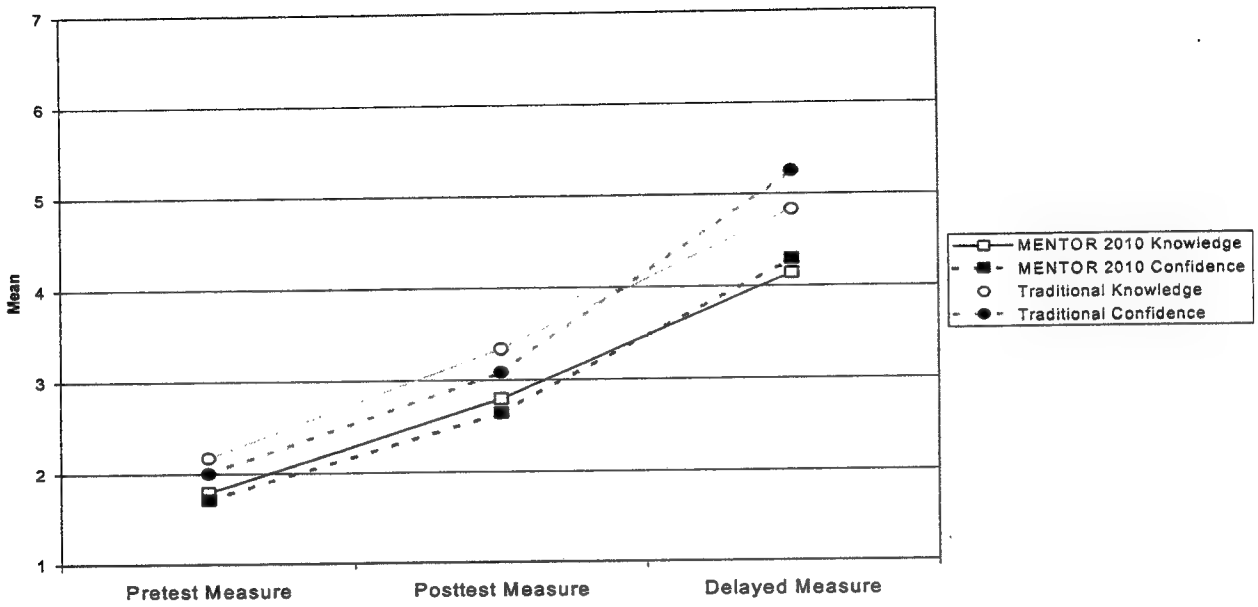



Gain Score Differences Between Groups
7
6
5
4
3
2
1
0
Mental Health
Patient Classification*
Respiratory Disorders
Airway Management
Combat Abdominal
GI/GU
Lesson Topic
* indicates significant difference p < .05
Traditional
MENTOR 2010

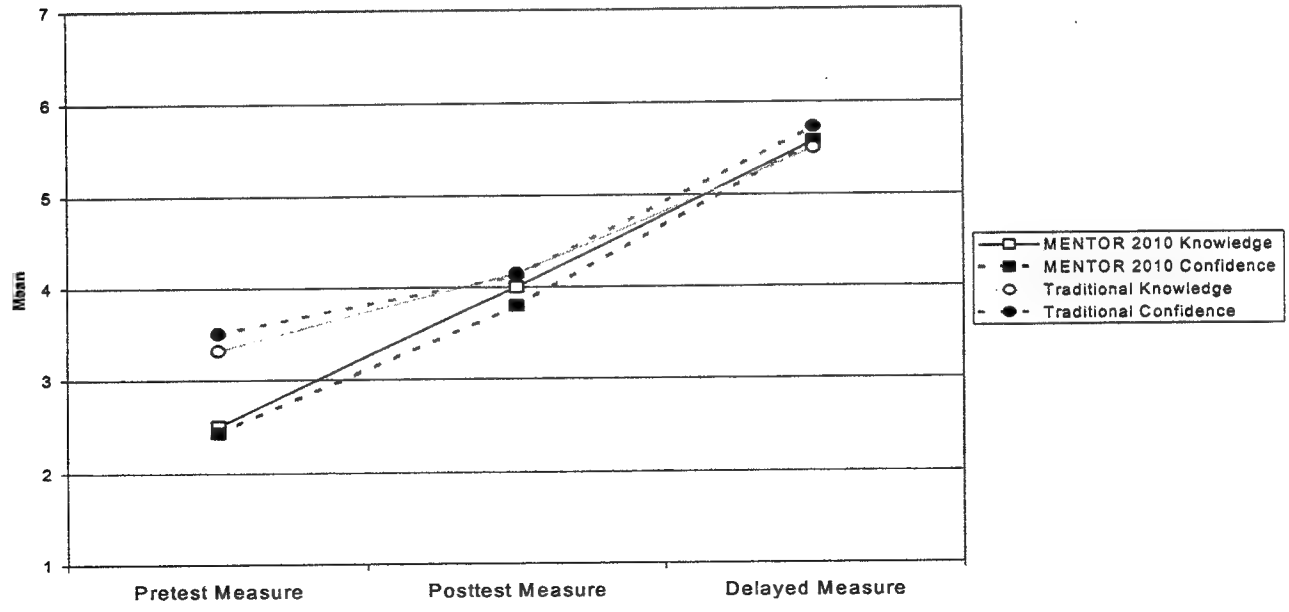

7
6
5
4
3
2
1
0
MTP
Stryker/Collins*
MiniOx
Bear 33
* indicates significant difference p < .05
Traditional
MENTOR 2010

APPENDIX P: Meta-cognitive Measures in Equipment Labs

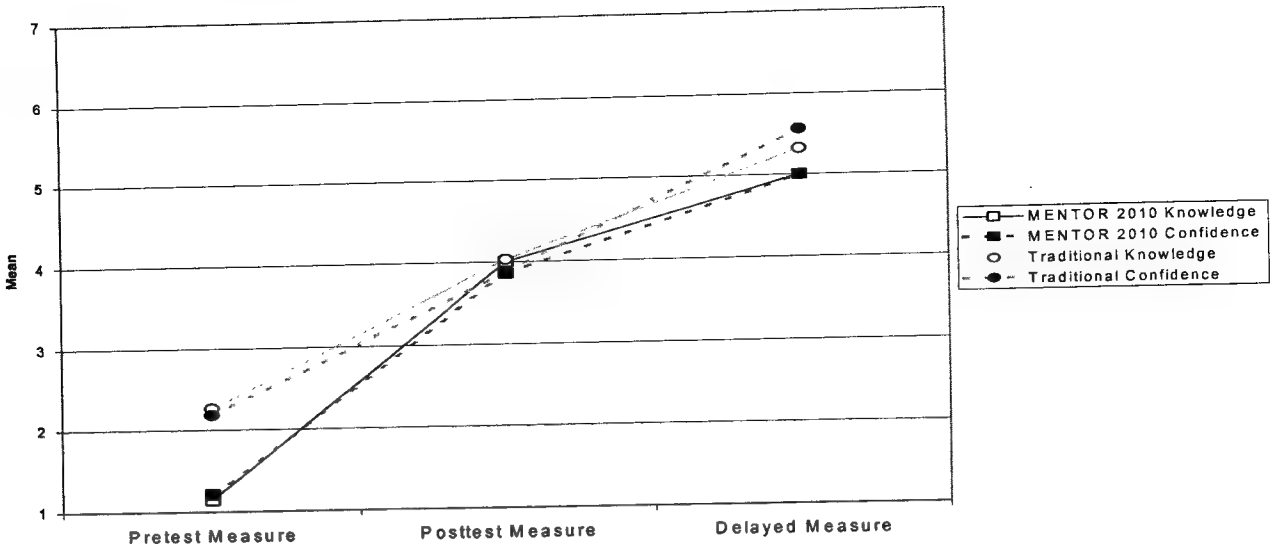
ALSS



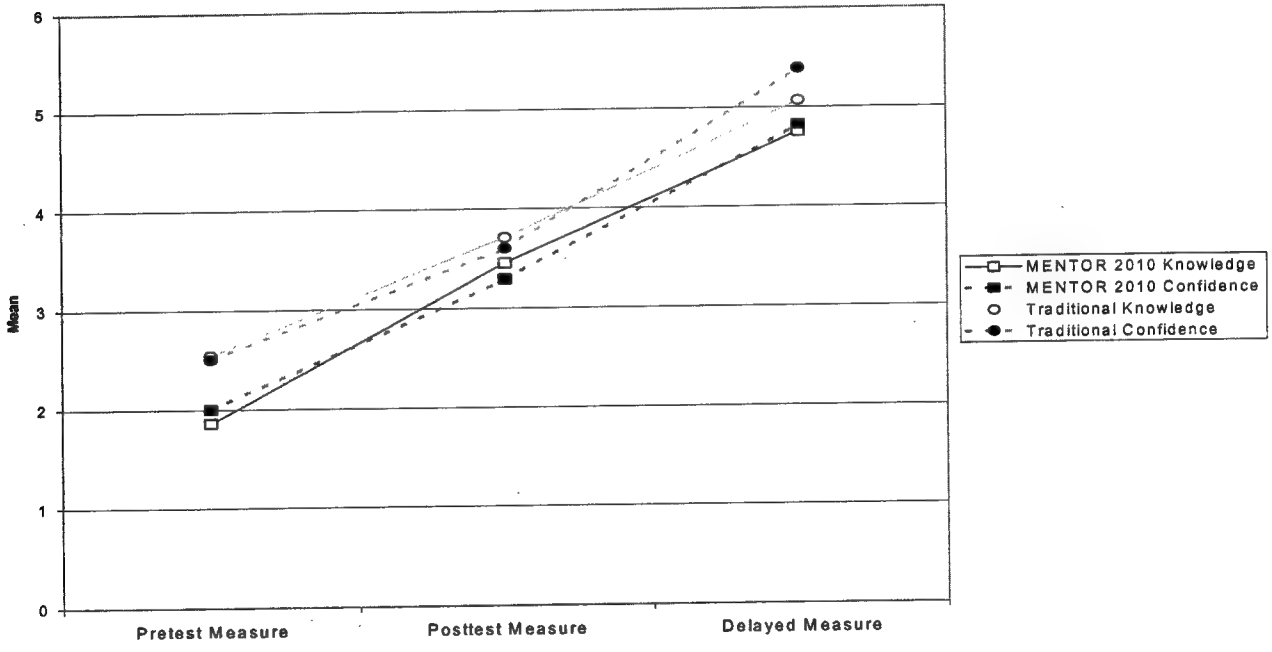
LifePak 10



MTP

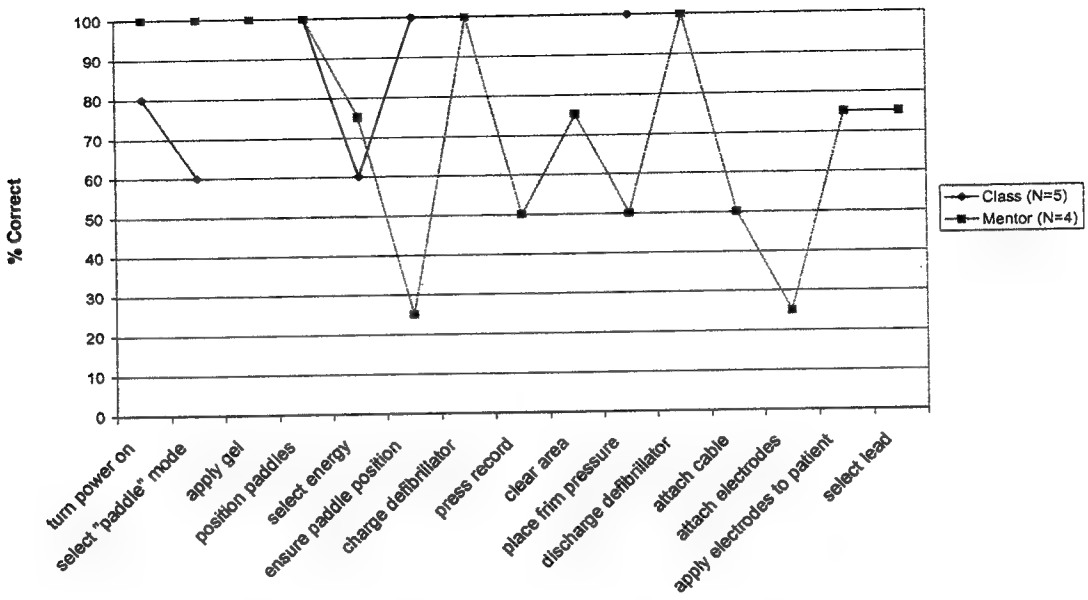

7
6
5
4
3
2
1
Mean
Pretest Measure
Posttest Measure
Delayed Measure
MENTOR 2010 Knowledge
MENTOR 2010 Confidence
Traditional Knowledge
Traditional Confidence

MiniOx

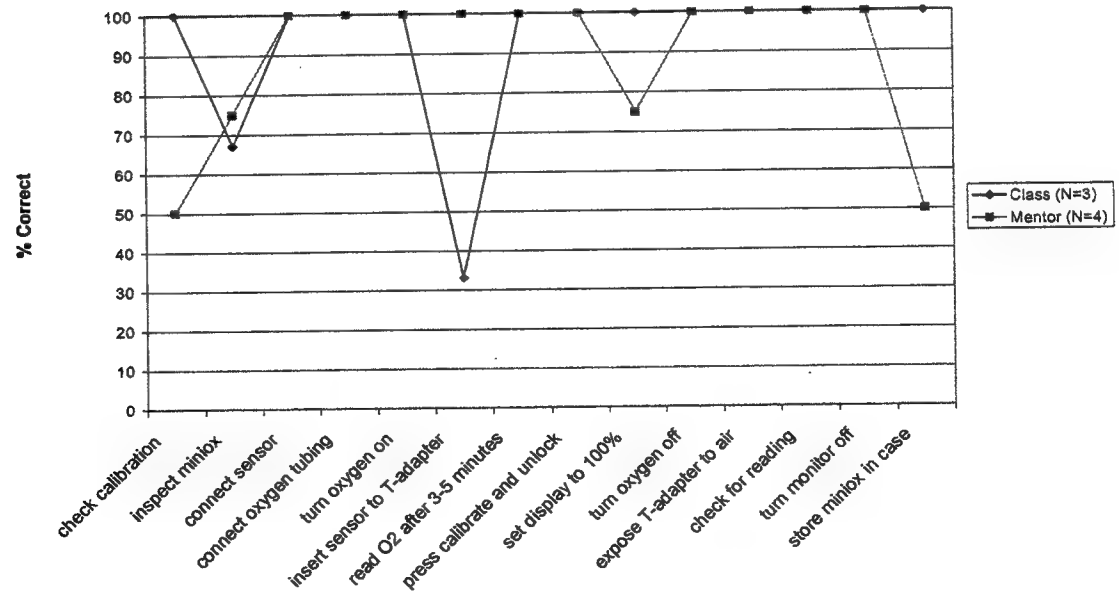

6
5
4
3
2
1
0
Mean
Pretest Measure
Posttest Measure
Delayed Measure
MENTOR 2010 Knowledge
MENTOR 2010 Confidence
Traditional Knowledge
Traditional Confidence

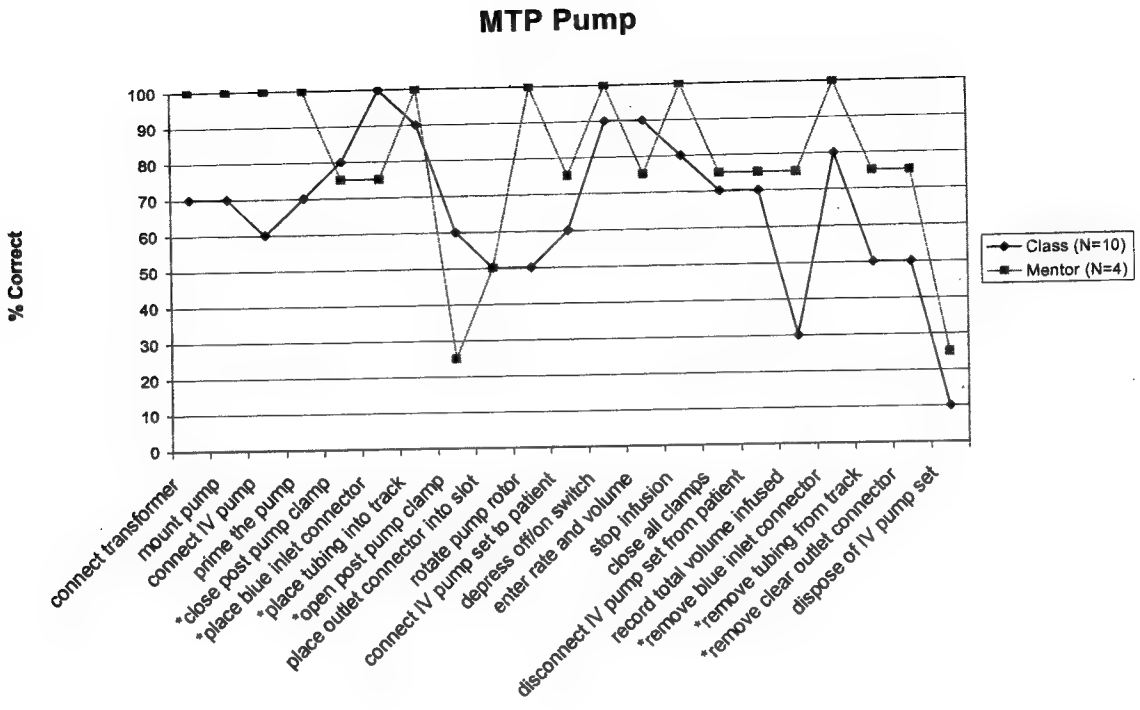
APPENDIX Q: Equipment Lab Observational Data TARGETS Graphs

LifePak 10



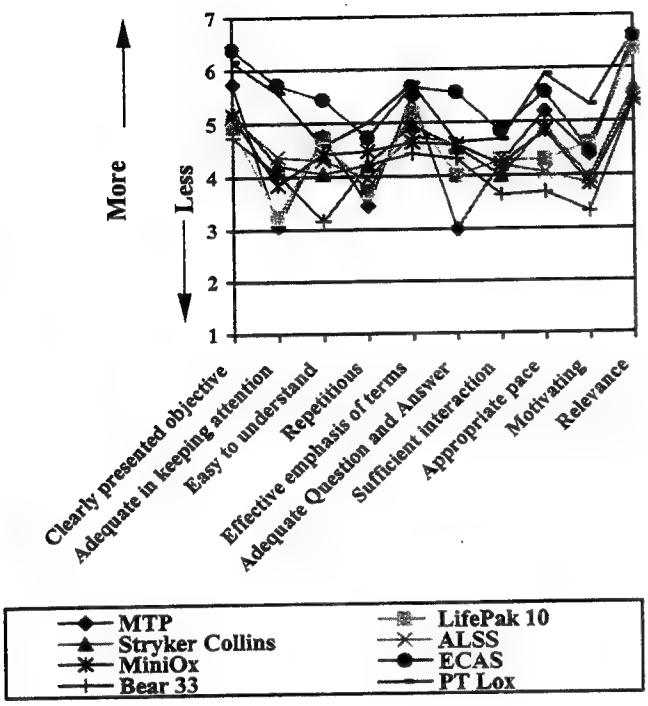
MiniOx

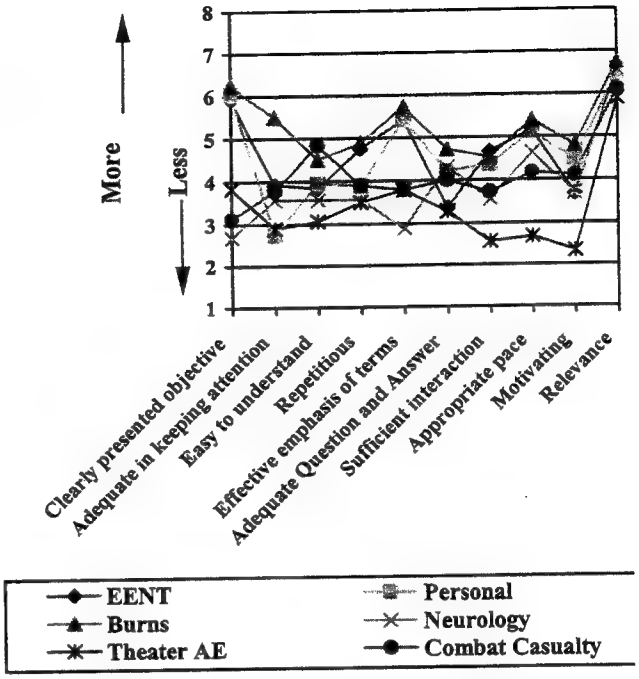


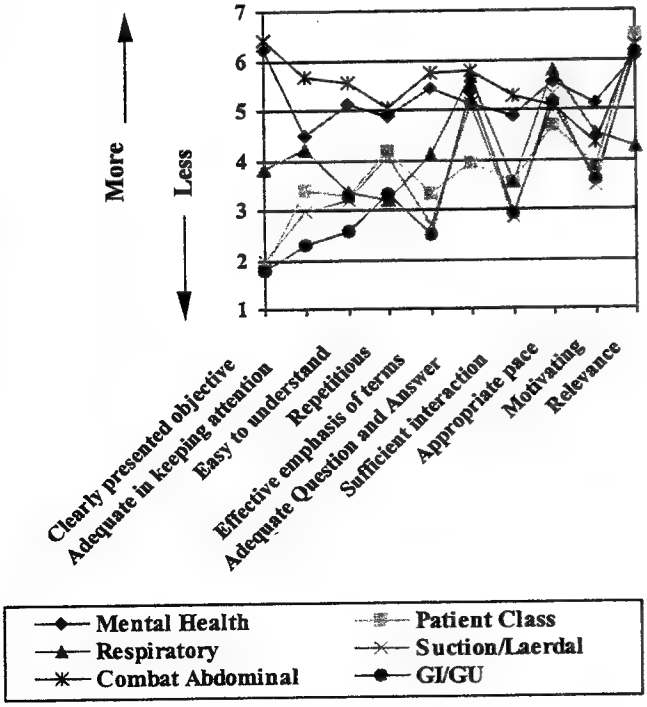

MTP Pump
% Correct
100
90
80
70
60
50
40
30
20
10
0
Class (N=10)
Mentor (N=4)
connect transformer
mount pump
connect IV pump
prime the pump
*close post pump clamp
*place blue inlet connector
*place tubing into track
*open post pump clamp
place outlet connector into slot
rotate pump rotor
connect IV pump set to patient
depress off/on switch
enter rate and volume
stop infusion
close all clamps
disconnect IV pump set from patient
record total volume infused
*remove blue inlet connector
*remove tubing from track
*remove clear outlet connector
dispose of IV pump set

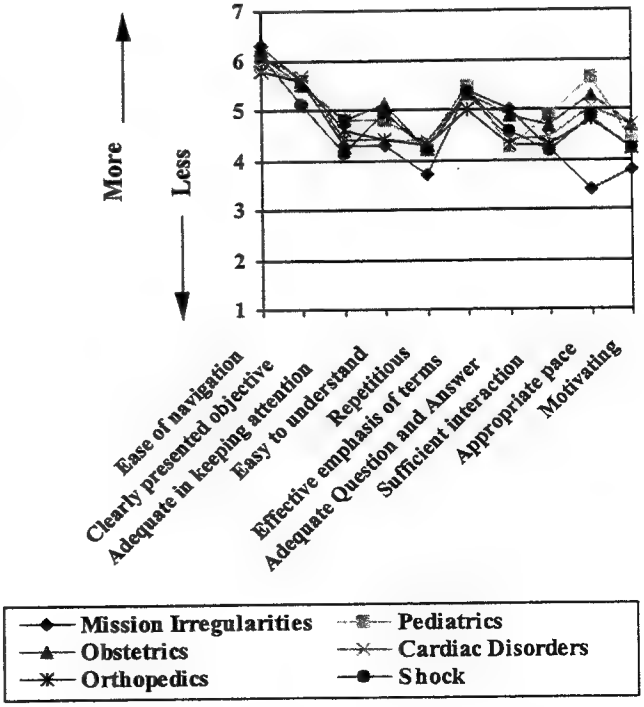
APPENDIX R: MENTOR 2010 Medical Equipment Instruction Training Assessment Survey

TAS Results for Formative Evaluation: MENTOR 2010 Group

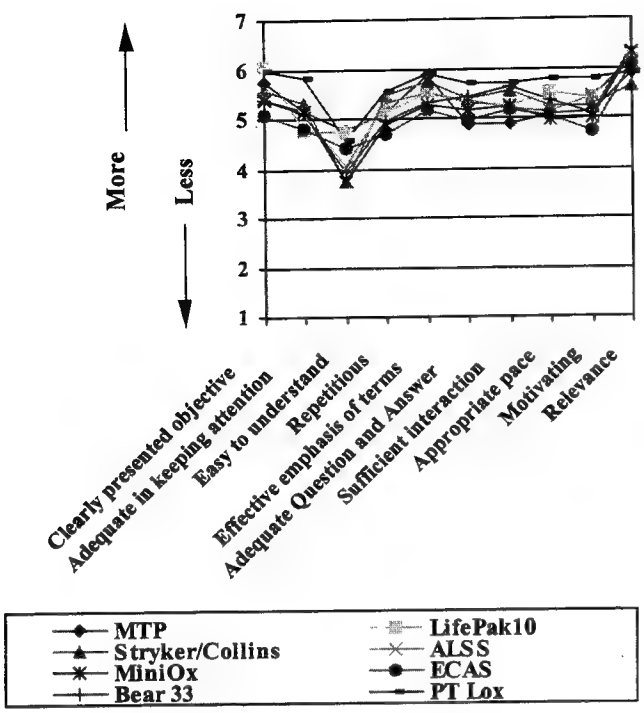


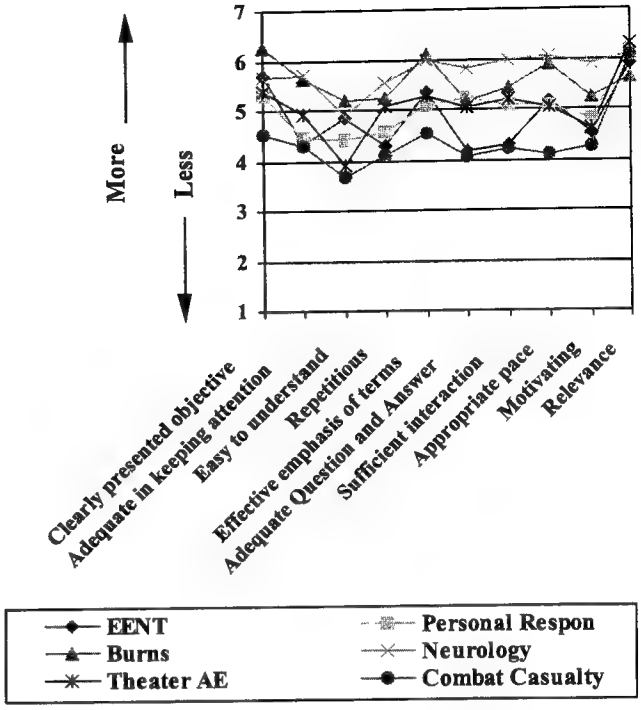


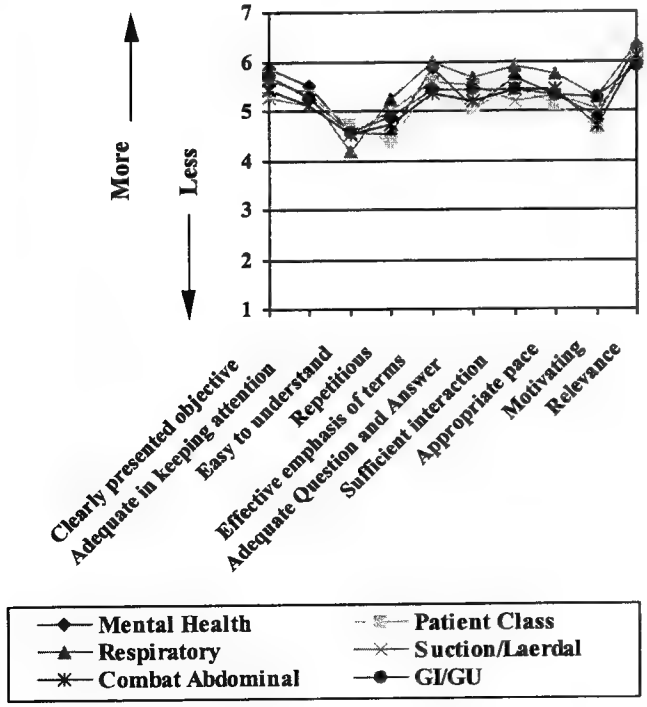


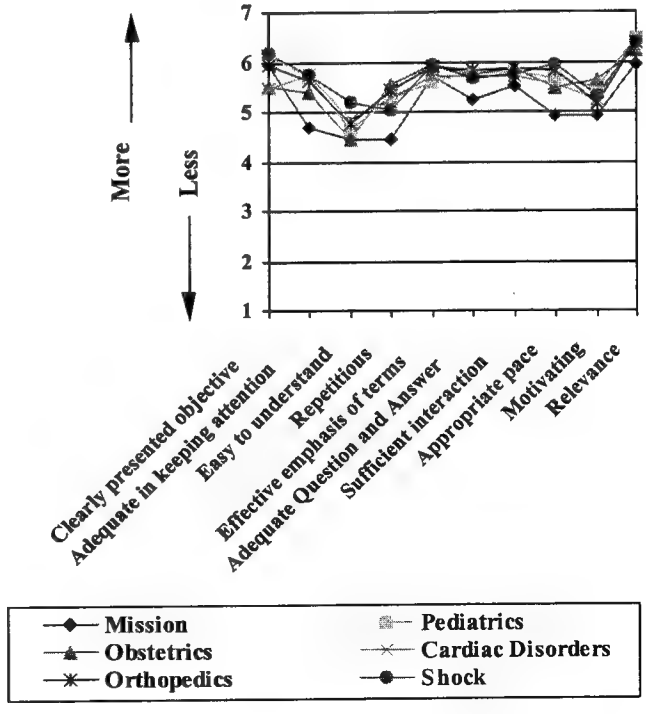


TAS Results for Formative Evaluation: Traditional Group

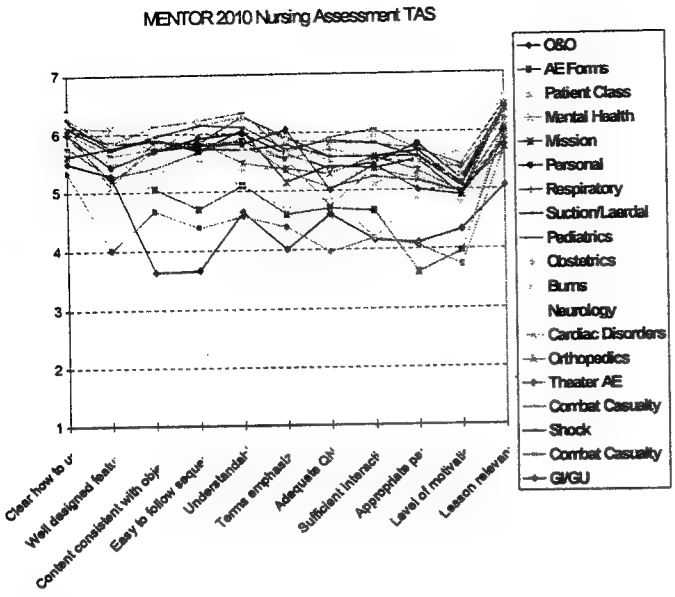


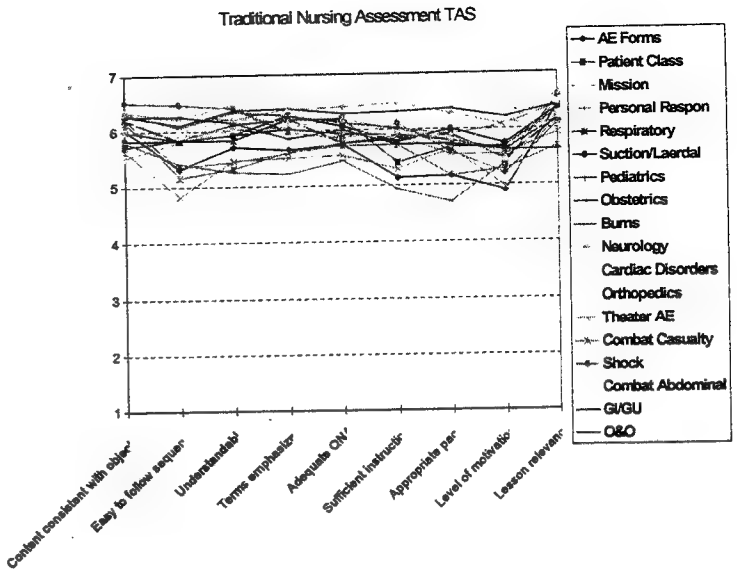


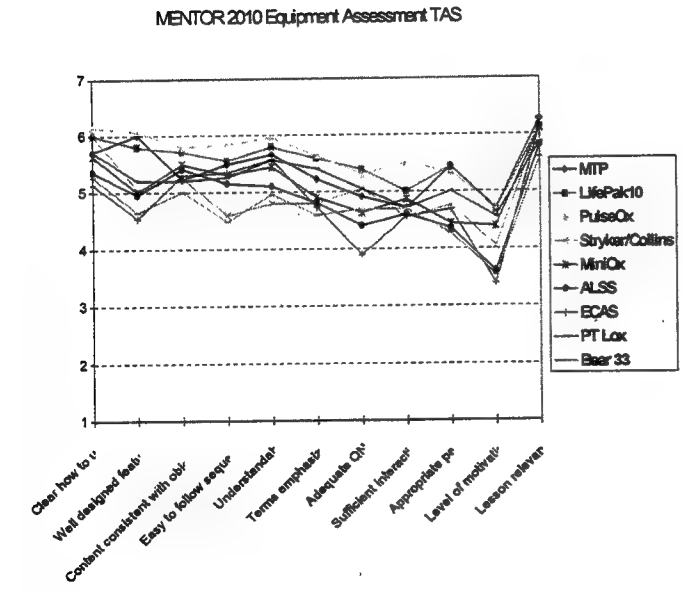


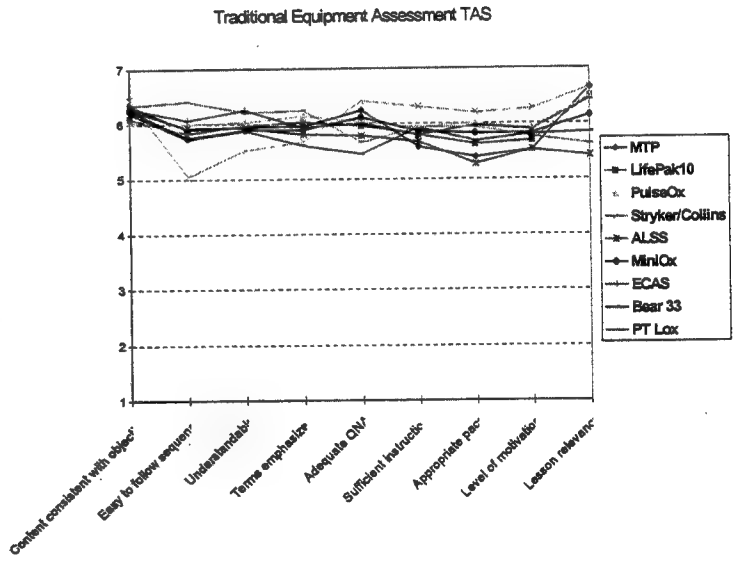


TAS RESULTS FOR PILOT EVALUATION

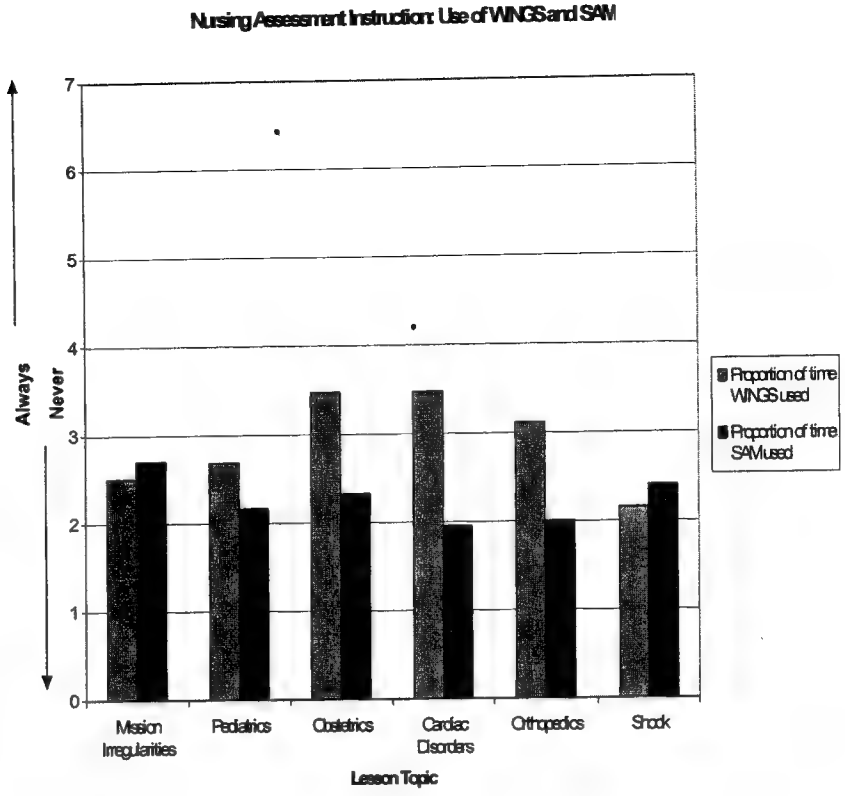


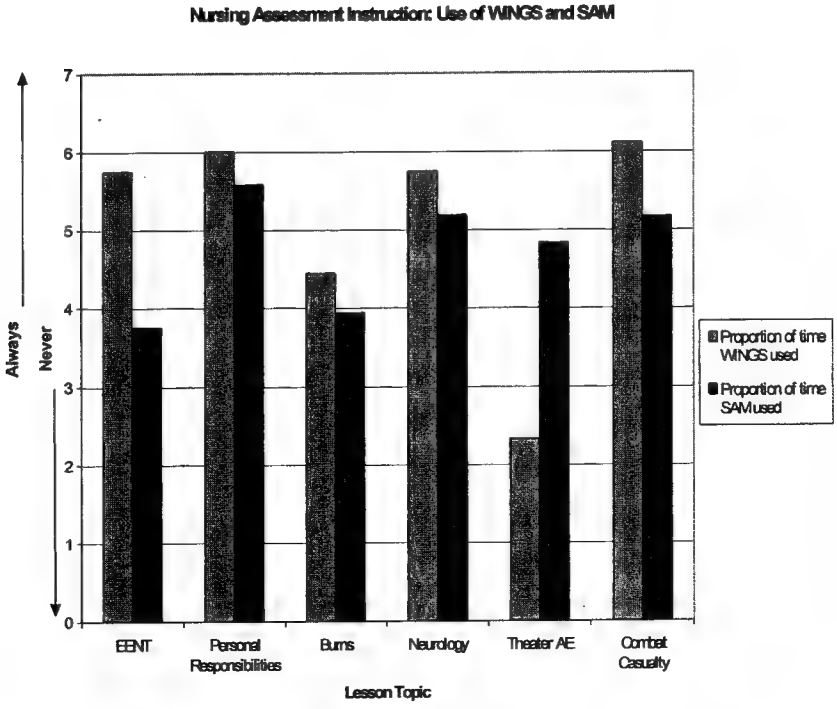




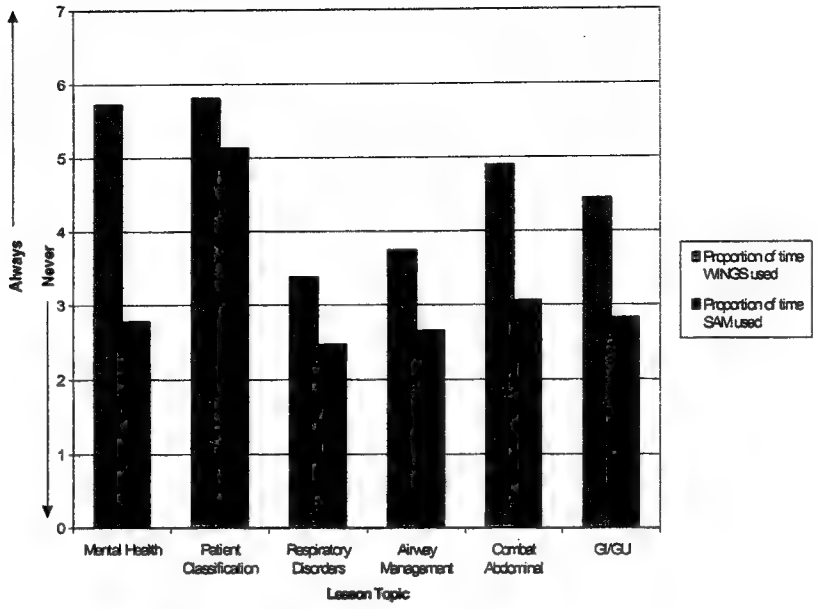


APPENDIX S: Use of WINGS & SAM

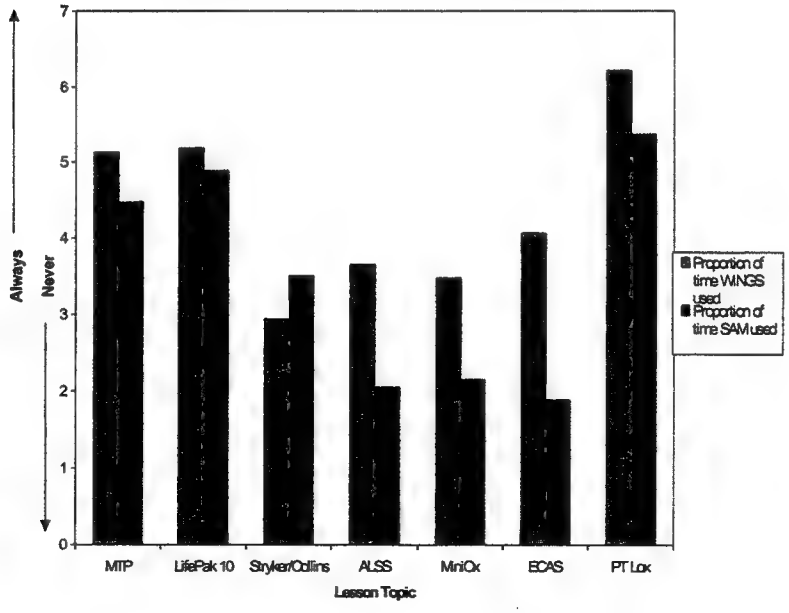




Nursing Assessment Instruction: Use of WINGS and SAM



Medical Equipment Instruction: Use of WINGS and SAM

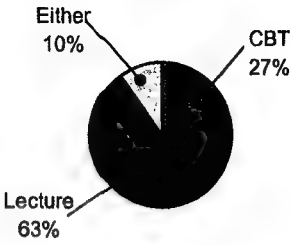


APPENDIX T

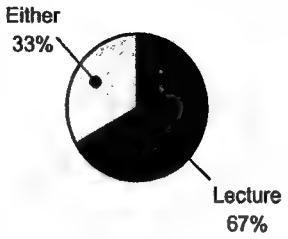
Training Preference by Lesson & Group

Patient Classification

Traditional
(N=30)

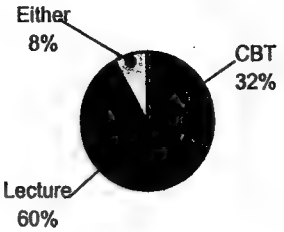


MENTOR 2010
(N=15)

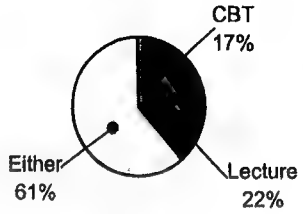


Mental Health

Traditional
(N=25)

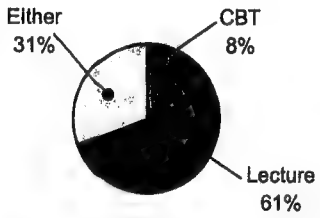


MENTOR 2010
(N=18)

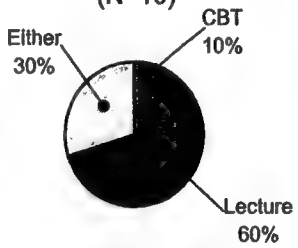


Mission Irregularities

Traditional
(N=26)

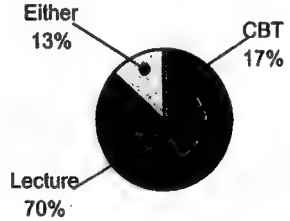


MENTOR 2010
(N=10)

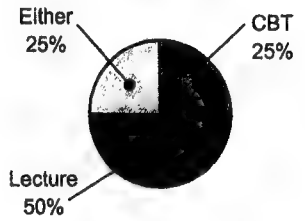


MTP

Traditional
(N=30)

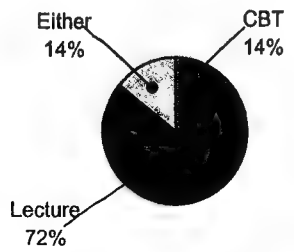


MENTOR 2010
(N=16)

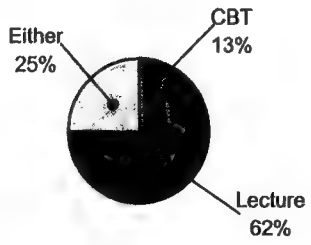


LifePak 10

Traditional
(N=35)

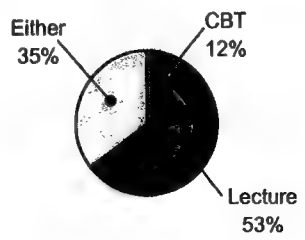


MENTOR 2010
(N=16)

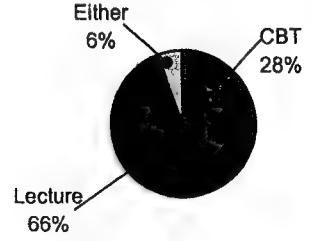


Personal Responsibilities

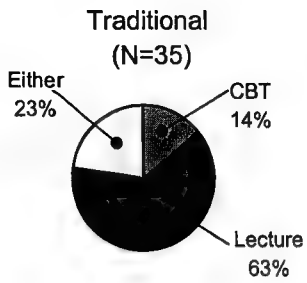
Traditional
(N=34)

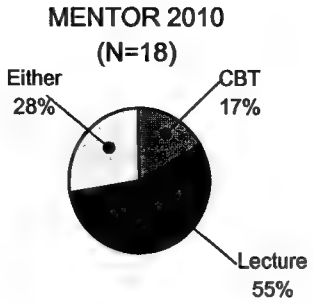


MENTOR 2010
(N=18)

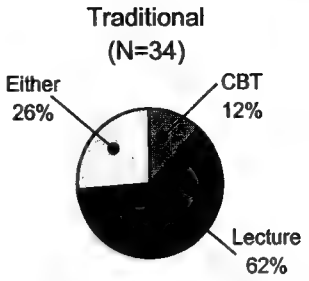


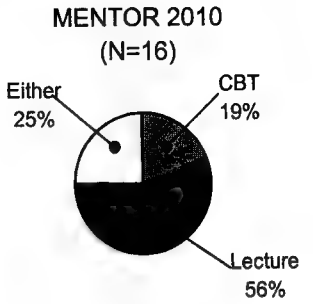
Respiratory Disorders



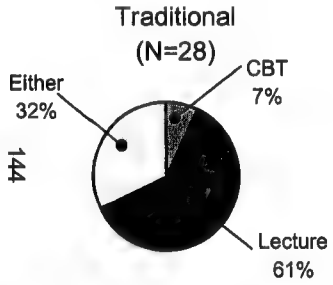


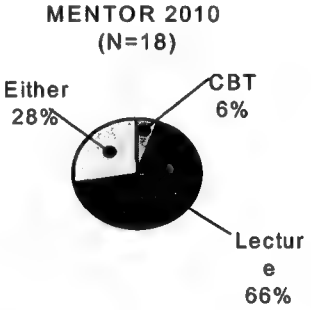
Airway Management



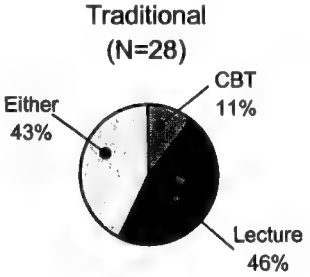


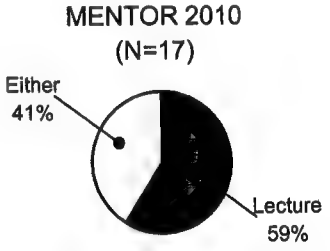
Pediatrics



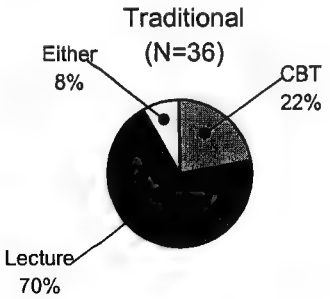


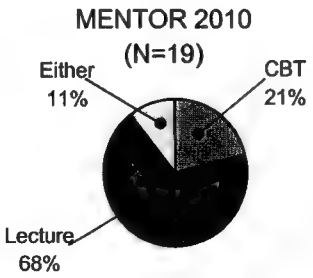
Obstetrics



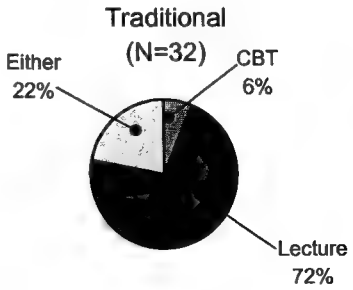


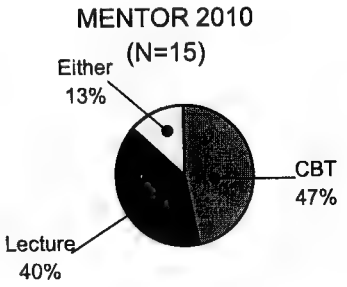
Stryker/Collins





Burns





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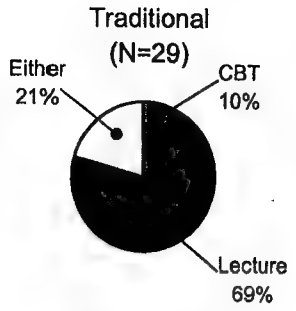
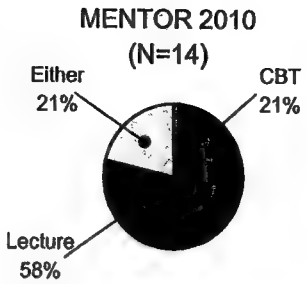
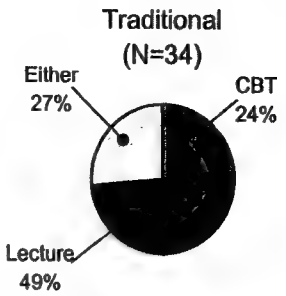
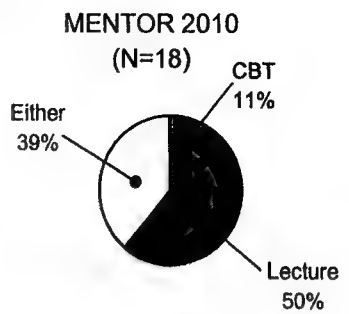


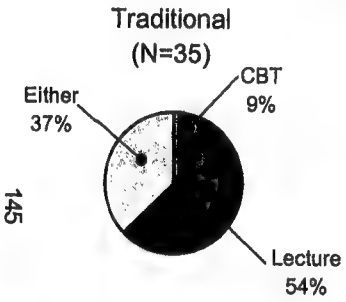


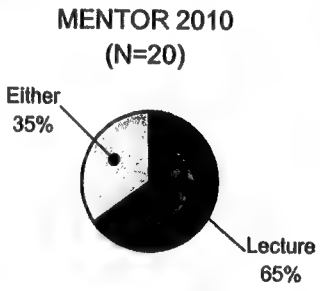
Cardiac Disorders



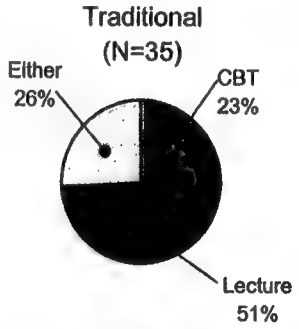


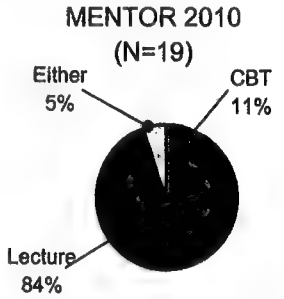
Orthopedics



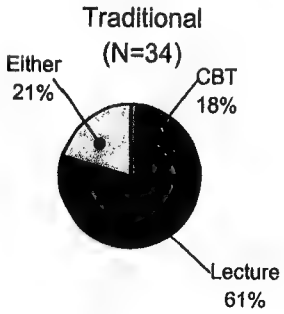


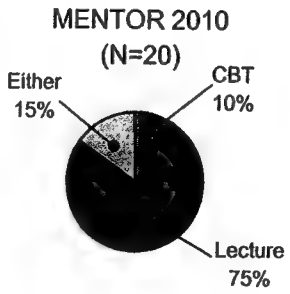
Mini Ox III



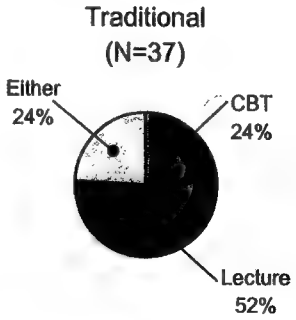


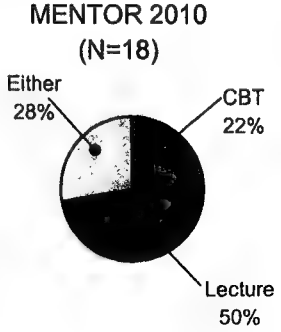
ALSS



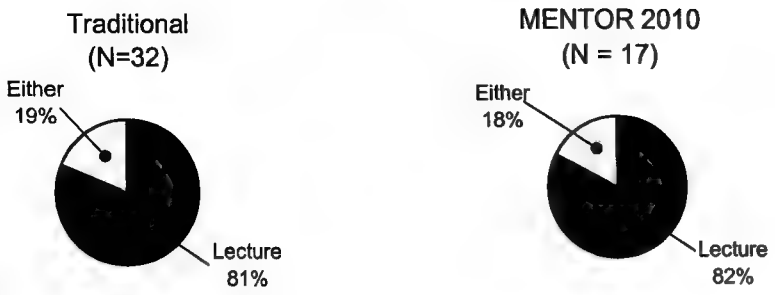


ECAS

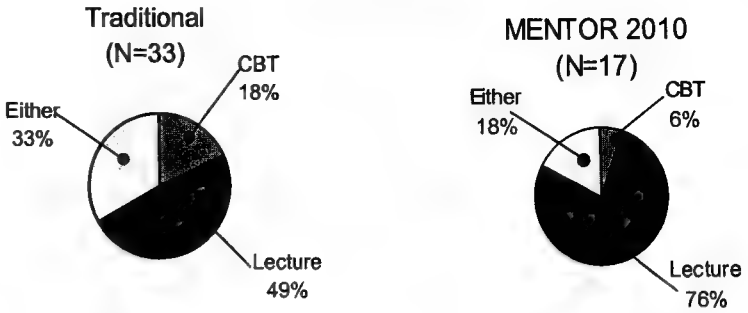




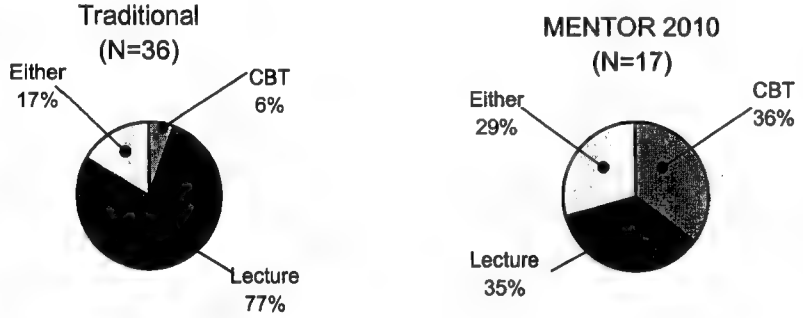
Theater AE



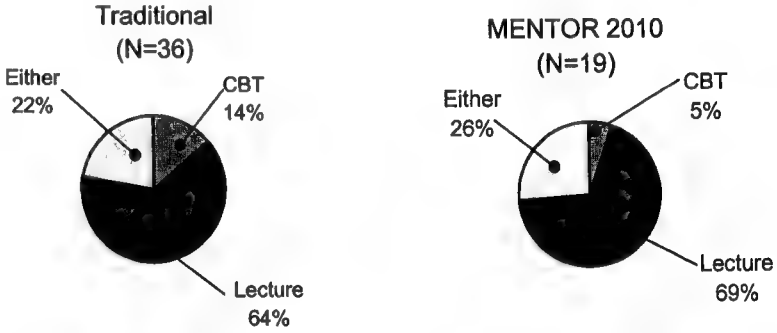
Combat Casualty



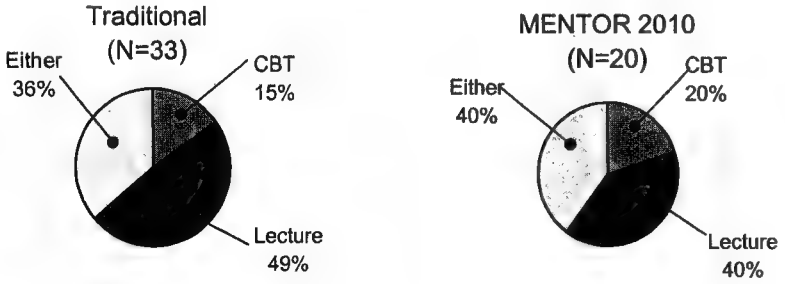
Pt Lox



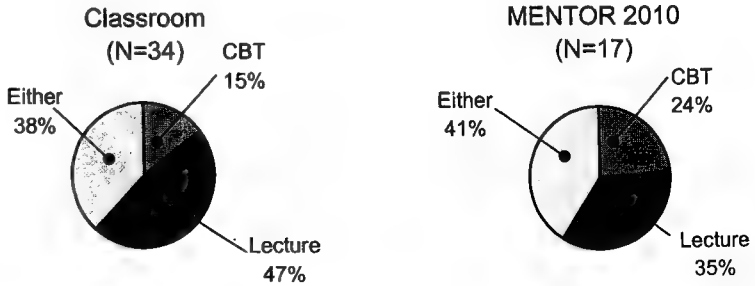
Bear 33



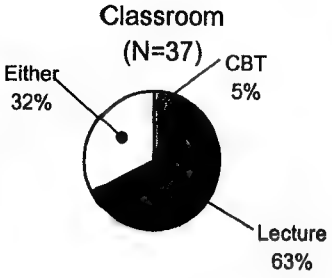
Shock

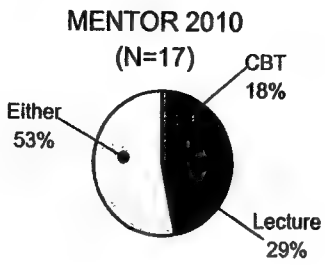


Abdominal Trauma

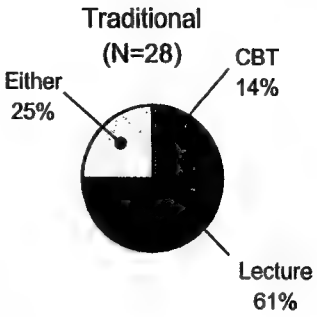


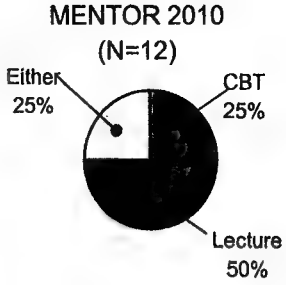
GI/GU



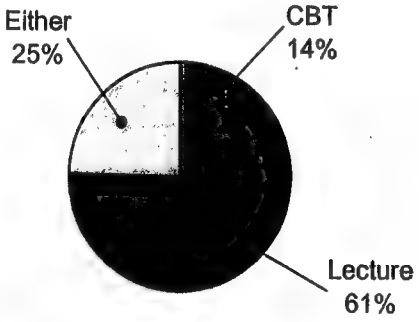


EENT

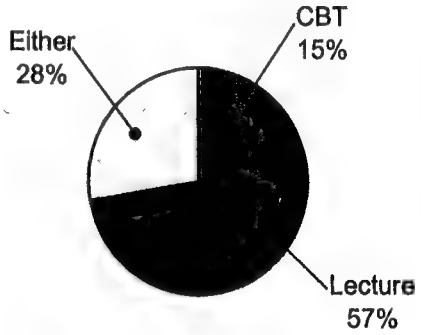




Classroom Total
(N = 846)



MENTOR 2010 Total
(N = 441)



Appendix U: Critical Review of Modules

Description of the Module Evaluation Tables

Name: Column one contains the name of the lesson and the modules included in the lesson.

Presentation Style: The presentation style refers to instructional method. If the presentation style was lecture then the material was organized similarly to a lecture where there are few indicators of what was important information and what it is not important. If the presentation style was lecture & list then the more important information was numbered or bulleted and organized in an "outline" fashion. It is noted if the presentation style included simulation.

Navigation: All lessons were linear. There were several ways of moving through a module. When navigation was linear the student simply pressed the airplane button to move forward or backward. Menus were used when more than one subtopic was covered in a module. A "+" or "-" in the Navigation column indicates whether the menu operated correctly or incorrectly, respectively.

Questions: The number in the Questions column indicates the number of questions presented in the module.

Definitions: The "-" or "+" in the Definitions column indicates the need respective need for hypertext to provide definitions or glossary of acronyms. This type of information is implemented in several modules, in particular, Personal Responsibilities.

Audio: Audio was incorrectly used throughout MENTOR 2010, thus, a "-" appears in the Audio column. Audio should be used to supplement learning or to guide students' attention to important material. It can also be used to simulate sounds that equipment or patients make. In most cases, audio was used to repeat screen content without emphasizing what was important.

Wings: The "-" or "+" in the Wings column indicates, respectively ,whether or not the Wings information contributed to or detracted from learning. Similar to the use of audio, a "-" indicates that Wings repeated textual information without emphasizing what was important to know.

Objectives: A "+" in the Objectives column indicates a well-stated objective. A "-" indicates a poorly-stated or missing objective.

Advanced Organizer: A "+" in the Advanced Organizer column indicates that the Advanced Organizer is well written and presented at the beginning of a module. A "-" indicates the Advanced Organizer is missing or poorly written.

Summary: A "+" in the Summary column indicates that the summary is well written and includes important points covered in the module. A "-" indicates the summary is missing or poorly written.

Annoyance Factor: A "-" in the Annoyance Factor column indicates that animation intended to gain students attention actually was a distraction from learning.

Cardiovascular Disease	Presentation Style	Navigation	Questions	Definitions	Attention	Audio	Wings	Objectives	Advanced Organizers	Summary	Annoyance Factor
Introduction	Lecture & Lists	linear	0	-		-	+	-		-	
Stresses of flight	Lecture & Lists	linear	1	-		-			-		-
Preflight assessment & preparation	Lecture & Lists	Branching -	2	-		-	+		-	-	
In-flight nursing care	Lecture & Lists	linear	3	-		-	++++-		-	-	
Selected Cardiovascular disorders	Lecture & Lists	Branching +	4	-		-	+		-	-	

Lifepak 10^	Presentation Style	Navigation	Questions	Definitions	Attention	Audio	Wings	Objectives	Advanced Organizers	Summary	Annoyance Factor
Introduction	Lecture	Linear	0	-	-	-	+	none		-	
Power Requirements	Lecture	Linear	1	-	-	-	--		-	-	-
Components	Lecture & Simulation	Linear	3	-		-	---		-	-	
Battery Support System	Lecture	Linear	1	-	-	-	--		-	-	-
Preflight Inspection	Lecture	Linear	1	-	-	-	--		-	-	-
Securing the Lifepak 10	Lecture & Lists	Linear	1	-		-			-	-	-
Patient Setup	Lecture & Simulation	Linear	1	-		-	-(w)-(w)		+	-	-
Operating Procedures	Lecture & Lists	Linear	10	-		-	-+		-	-	-

^In Battery Support and Preflight Inspection "lecture" is used to present a procedure while in Securing and Operating Procedures a Lecture Power Point combination is used to teach a procedure. In <u>all</u> modules excluding the Introduction a simulation should be used.

Personal Responsibilities	Presentation Style	Navigation	Questions	Definitions	Attention	Audio	Wings	Objectives	Advanced Organizers	Summary	Annoyance Factor
Introduction	Lecture	linear	0	-	-	-	+-	-		-	-
Crew Rest	Lecture & Lists	Branch -	3	+		-	-		-	+	-
Crew Duty Time	Lecture & Lists	Branch -	3	+		-			-	+	-
Crew Flying Restrictions	Lecture & Lists	linear	1	+		-			-	+	-
Maintain Crew Currency	Lecture & Lists	linear	1	-		-			-	+	-
Personal Flying Equipment	Lecture & Lists	Branch -	3	-		-			-	+	-
Additional Squadron Duties	Lecture & Lists	linear	1	-		-			-	+	-

Obstetrics*	Presentation Style	Navigation	Questions	Definitions	Attention	Audio	Wings	Objectives	Advanced Organizers	Summary	Annoyance Factor
Introduction	lecture	linear		-	-	-	+	-		-	-
Indications for AE	Lecture & lists	linear	1	+		-	-		-	-	-
General Guidelines	Lecture & lists	Branch +	1	+		-			-	+	-
Patient Positioning	Lecture & lists	linear	1	-		-	---		-	+	-
In-flight Labor and Delivery	Lecture & lists	Branch +	2	-		-			+	+	-
Administrative/ Documentation	Lecture & lists	Branch +	2	-		-	---		-	-	-
Obstetrical Complications	Lecture & lists	Branch +	2	-		-			-	-	-
Stresses of Flight	Lecture & lists	linear	2	-		-			-	-	-

*Text in many frames was hard to read because of background selected

ALSS[#]	Presentation Style	Navigation	Questions	Definitions	Attention	Audio	Wings	Objectives	Advanced Organizers	Summary	Annoyance Factor
Introduction	Lecture	Linear	0	-	-	-	+	-		-	-
Components	Lecture, list, & simulation	Branch +	7			-	++++++-		-	+	-
Preflight	Lecture, list, & simulation	Linear	2			-	+		-	-	-
Operation	Lecture & list -	Linear	1	-	-	-	+		-	-	-

[#]Component

Screens text hard to read because of background
Need to match audio to sounds generated by ALSS
List out of order

[#]Operation

No use of simulation in how to use section

Mini Ox[&]	Presentation Style	Navigation	Questions	Definitions	Attention	Audio	Wings	Objectives	Advanced Organizers	Summary	Annoyance Factor
Introduction	Lecture	Linear	0	-	-	-	+	-		-	-
Altitude Physiology	Lecture	Linear	1		-	--	-		-	+	-
Components	Lecture & List	Branch -	4	-	-	--			-	-	--
Preflight Calibration	Lecture, list, & simulation	Branch -	4	-		--	-		-	-	--
Pick-up point calibration	Lecture, list, & simulation	Branch -	2	-		--			-	-	--
Inflight use	Lecture & List	Branch -	3	-		--	-		-		--
Post-flight procedures	Lecture, list, & simulation	Branch -	1			--			-	+	-

[&]Overall lots of information in the audio and Sam. Important information should be in the frames

[&]Preflight

Text and background problems
No practice
Poor and misuse of simulation

[&]Inflight Use

Text and background problems

[&]Post-flight

Text and background problems